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Rail-Road News.

Pacific Railroad.

We have received the report of the chief engineer, upon the preliminary surveys of the Pacific Railroad, Missouri—not Whitney's road. It is a most able document, but it is just what might be expected of James P. Kirkwood, C. E. This road is to be the commencement of the great road which is yet to be the inland highway between the Atlantic and Pacific oceans, and Missouri could not do a wiser thing than to leap right into the track at once and go on in its construction whenever the best route is fairly demonstrated. From position and natural resources, it appears to us that Missouri is destined to be the great centre State of the Union, and the sooner she opens a railroad communication from the Mississippi to her uttermost western borders to meet New Mexico and California, so much the better for her own sake. There can no loss accrue, however expensive the road may be at first, for it must go on increasing in value. The Erie Railroad is an evidence of this.

Railroads of Indiana.

We have received printed pamphlets containing the address of Ex-Governor David Wallace, at the celebration of the opening of the Peru and Indianapolis Railroad at Noblesville, Ind., on the 11th of last March. Indiana, more than any other Western State, is alive to the importance of railroads, and she is wise, as ex-Gov. Wallace says, in her projects. Railroads are the test of civilization now, as Macadamized roads were forty years ago. In Indiana, with her fine bituminous coal fields, we expect that coke, instead of wood, will soon be used in the locomotives. This will be the means of introducing more comfort to those who travel, as no sparks nor smoke will then annoy the traveller.

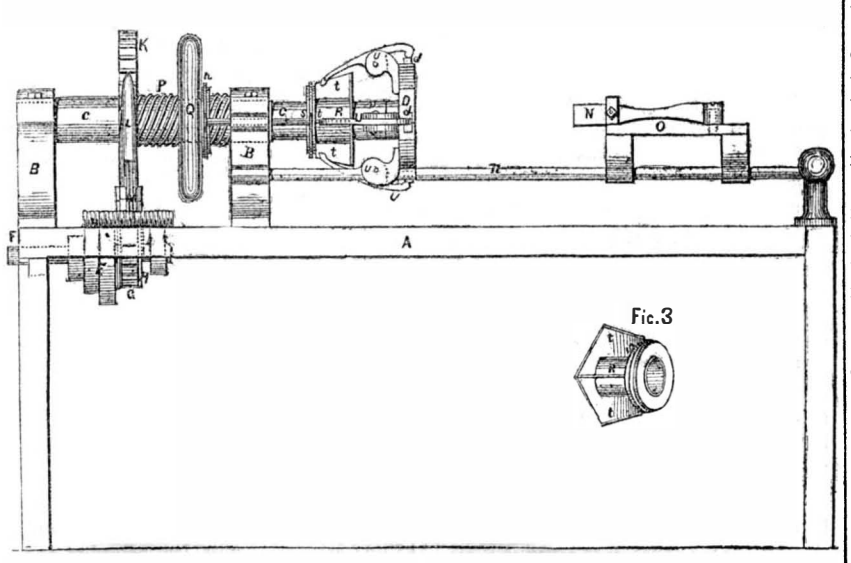
The Panama Railroad.

The steamship Empire City, arrived at this port on last Sunday morning from Chagres, and by it we learn that the first locomotive was started on the Isthmus Railroad, on the 24th ult. This great work under Col. Totten is proceeding rapidly towards completion.

India Rubber Armor.

In Paris a new kind of cuirass for the use of the army, is shortly to be tried. This cuirass is of vulcanized india rubber, about half an inch thick. This thickness, it is stated, is more than sufficient to resist the action of a ball projected from any kind of firearm. All the experiments tried have proved entirely successful. The force of the ball is completely broken by the elasticity of the India rubber, and it falls on the ground at the feet of the person against whom it was sent.

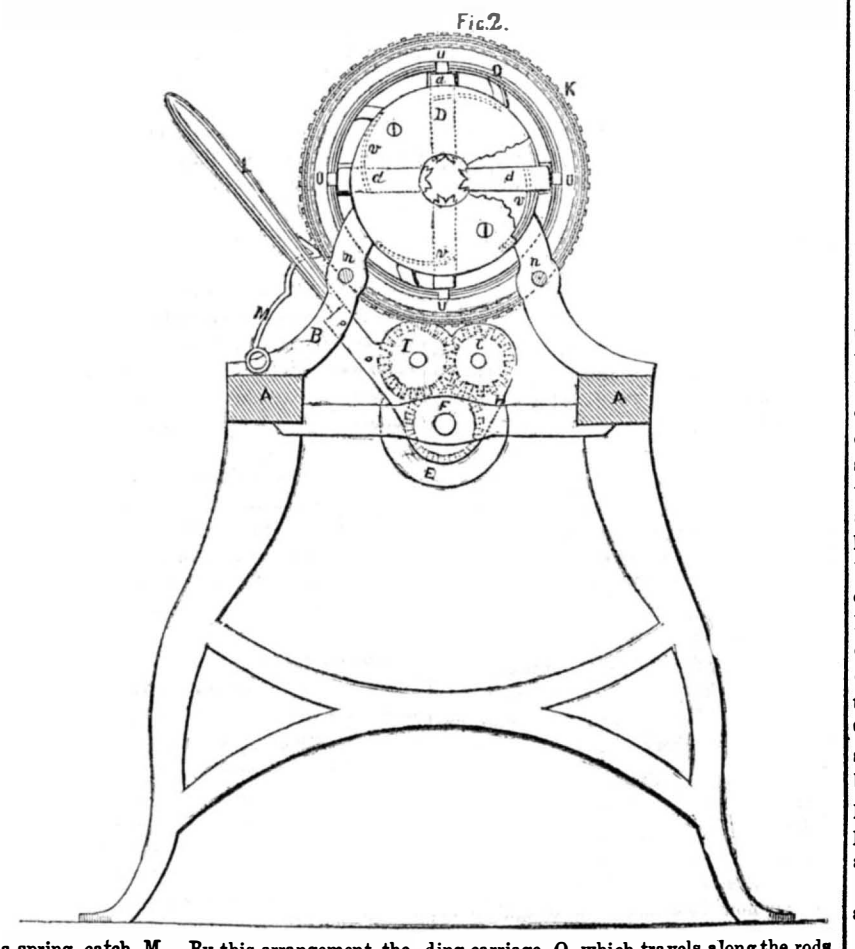
IMPROVED MACHINERY FOR CUTTING SCREWS.



The accompanying engravings represent improvements in machinery for cutting screws, which have been invented by Mr. George W. Lull, of Genoa, N. Y., who has taken measures to secure a patent for the same.

Figure 1 is a side elevation; figure 2 is a transverse vertical section, taken in front of the chuck, and figure 3 is a perspective view of the wedge collar, by means of which the levers are made to close the dies. The same letters refer to like parts.

The improvement consists in certain devices attached to and in connection with the chuck, by which the dies may be closed or contracted upon the screw or rod upon which the screw is to be cut, during the time the chuck is revolving, by which a deeper cut can be taken without stopping the machine. A is the frame or bench upon which the working parts are supported. B B are the standards, constituting the fixed headstock, which carries the mandril and chucks. C is the mandril; D is the chuck. These do not differ materially from like parts of other screw cutting machines. The mandril is bored throughout; the chuck has the dies fitted to it in the ordinary way; E is the driving pulley on the driving shaft, F, below. G is a toothed wheel on said shaft; H is a small frame, consisting of two plates of metal fitting loosely on the shaft, F,—one on each side of the wheel, G, carrying two small toothed wheels, I J, the former gearing always into G, and the latter into I (but never into G). Either of these toothed wheels is capable of gearing into the wheel, K, by means of the lever, L, by which the said frame may be turned on the shaft, the lever being held so as to keep either in gear, by



a spring catch, M. By this arrangement the mandril may be made to revolve in either direction, the pulley, E, and shaft, F, always revolving in the same direction. N is a vice, in which the rod or bolt to be screwed is held secure from turning. It is mounted on a sliding carriage, O, which travels along the rods, *n*. P is a screwed tube, which encircles the mandril, and is secured to the back of the front standard, B, of the headstock, or otherwise supported and held secure from turning. Q is a wheel whose hub has a left-handed screw inside, fitting to the screw outside the tube, P; in the hub there is a groove or channel, in which a loose collar is fitted so as to turn freely, but to have no end play. R is a collar fitting loosely outside the mandril near the back of the chuck; it has a flange, S, at back end, in which there is a groove or channel with a loose collar, *r*, fitting so as to turn but not moving endwise. This collar, *r*, as well as the collar, *p*, on the hub of the wheel, Q, may be put on in any convenient way. The two collars are connected by rods which pass through holes in the headstock, the holes forming guides for them. On the collar, R, there are wedges, *l*, corresponding in number with the dies on the chuck, standing up radially from the axis; these wedges are secured between the flange, S, and another flange on the collar, inclining downwards or inwards towards, S. U U are levers hung on fulcra, *d*, which are inserted in fixed lugs at the back of the chuck, one behind each die; the front ends of these levers rest upon the back or outer ends of the dies, which project through the periphery of the chuck, and their back ends upon the inclined edges of the wedges, *t*. The springs, *v*, are secured within the chuck, and their ends fit in recesses in the dies, or are otherwise caused to bear on them so as to force them outwards and throw them back from their work; this keeps the back ends of the levers down upon the wedges. In order to prevent the wedge collar turning on the mandril, and to make it turn with it, the ends of the levers have small notches in them fitting on the edge of the wedges. The collar might, however, be prevented from turning by other means, which would allow it to slide, such as by fitting on a feather way on the mandril.

The necessary control over the dies is exercised in the following manner: by turning the wheel, Q, so as to cause it to run back on the screw, P, the flange, S, attached to the loose collar will draw back the wedge, collar, R, and the wedges, *t*, will force out the back ends of the levers, U, and force in the front ends, which bear on the dies, and force the dies towards each other. By turning the wheel forward, the wedges will be withdrawn from the levers, and the springs, *v*, will throw the dies out or back. The operation of screwing a bolt will be conducted as follows:—the bolt being screwed in the vice, the carriage, O, is run forward to bring the point into the dies, which are then made to bite it by the operator turning the wheel, Q, as above described; this may be done either while the dies are stationary or in motion. The revolution of the dies in one direction will cause them, as they cut the screw to draw forward the bolt, which should the screw be larger than the travel of the carriage, O, may be released from the vice and the carriage moved back to take another hold, the screwing afterwards proceeding as before; the screw passing through the mandril may be cut any length. When the screw has been cut the proper length, should it require further cutting to reduce it to the required size, the direction of the revolution of the mandril should be reversed, and the wheel, Q, turned so as to force in the dies, and the screw run entirely back. This operation may be repeated any number of times without stopping the machine. By giving the dies more pressure as the point of the screw leaves them, any amount of taper may be given to it.

More information may be obtained by letter addressed to Mr. G. W. Lull, as above.

Defeat of the Amazons.

There has been a great battle in Africa between King Dahomey's army of female warriors and a neighboring tribe. The she warriors were defeated with great slaughter.

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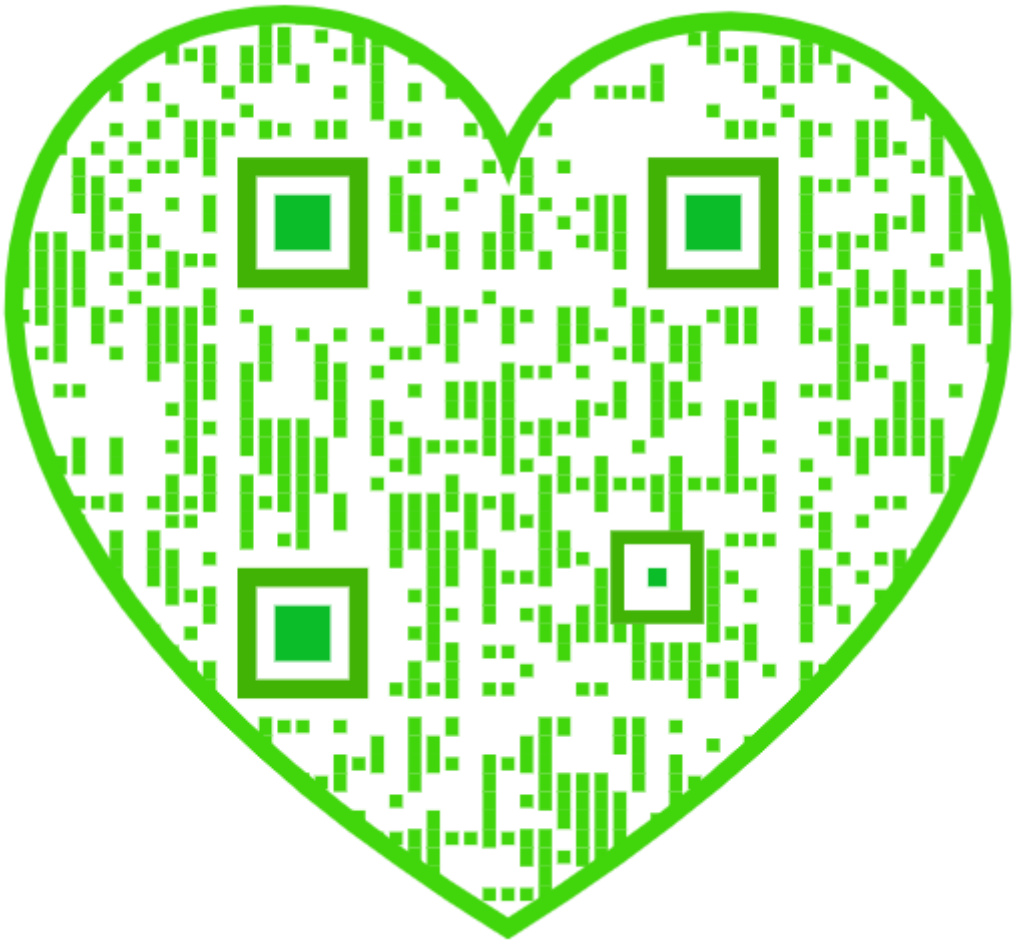

Miscellaneous.

Special Correspondence of the Scientific American.
Daguerreotypes, Machinery, &c.

LONDON, June 18th 1851.

I imagined that the English were very far behind our countrymen in the art of Daguerreotyping, and so far as a fulness of tone—light and shade—is concerned, I believe they are, but I think they color better. A distinguished artist, Mr. Beard, of London, has created no little excitement by a new species of daguerreotype. No picture will please the English unless it is colored, and it is to this point the artist hus turned his attention. Formerly the pictures were colored by dusting powder on the plate, but this was a miserable method, as the powders generally decayed and the plate soon tarnished. The improvement consists in covering the silver plate with some chemical substance, quite transparent and with a shining enamel surface, which resists wetting, and can be colored like an oil painting. His pictures appear like true and beautiful miniatures painted on ivory. This is not the Hillotype which I have heard about in New York, and it may not be equal to it, but certainly it is further advanced—it is here in London among the nations of all the world.

Among the machinery in the American department, the inventions of Capt. J. Erricsson, of New York, are very prominent, especially what is termed a caloric or hot-air engine; another is his Alarm Barometer for ships. It is an improvement in the barometer by which it can be made to sound a gong when the mercury falls to a certain point, so that ample time may be given to shorten sail or prepare for a blow; and the captain of a ship may go to sleep without fear of being caught by a squall, from the carelessness of the officer on watch.

Having said so much in my letters about the Great Exhibition, it may relieve the readers of the Scientific American to change the tune for once, although it is a positive fact that all the articles, and worthy ones, too, exhibited here, could not be described by me in a number of years yet I will now digress for a space.

There has been a very interesting experiment with locomotives at the famous engineering village of Crewe, for the purpose of testing the relative powers of small engines used on the northern division of the London and North Western Railway, and the large engines used on the southern division of the same line. The trial took place on the incline between Crewe and Madely. The point to be decided on was, whether one of the large engines belonging to the southern division was better able to work a heavy goods train than two of the moderate-sized engines used on the northern division, the power of the two being about equal to the larger one. The engines were to run against time, load, and consumption of coke. The trial was witnessed by a large number of scientific men. Two of the smaller engines of the northern division were first tested separately, and then together. The first was started at a quarter to 12, and took her load up the bank in 49 minutes. The second was off a little after 1, and took her load up in the short space of 32 minutes. They were afterwards hooked together and attached to the double load, which they took in capital style in 35 minutes. The large engine was then hooked on to the same load, and struggled hard for an hour and fifteen minutes to bring the load conveyed by the two small engines in 35 minutes. The superiority of the smaller engines was as readily acknowledged as it was clearly demonstrated. Before the trial the most sanguine expectations were entertained by many that the large engine would have been victorious. This is something for our American engineers. There can be no doubt but the light engines are the most profitable in every sense of the term.

The attention of the British military authorities is now directed towards the arms of the army. Colt's revolvers are attracting attention, and the Zund Nadel—the breech-loading Prussian rifle—has been the subject of a number of experiments before some of the officers of the army, and it is recommended that some of the regiments be armed with them. It carries a ball four times further than a British musket. The time is not far distant when battles will be fought at more respectable distances than formerly. The huge British grenadier, with his flaming red coat, is of mighty little use when advancing to "charge bayonets," as he can be popped off at 600 yards distance by some 4 feet 6 inch fellow behind a molehill with a Zund Nadel. If the Zund Nadel had been known by Bony at Waterloo, he would not have cared a straw for Wellington's "up Guards and at 'em," not he. So much for his living 36 years behind the age.

EXCELSIOR.

M. Orfila on Nicotine.

At the last sitting of the Academy of Medicine, says Galignani's (Paris) Messenger, M. Orfila's report on nicotine was read. This report, which confirms facts already known, contains many new observations of interest to chemists and medical jurisprudence, relative to the properties of the poison, and of its traces after death.

Accordingly to this document, nicotine was discovered in 1809, by Vauquelin; and is to be found in different kinds of nicotiana, in various proportions. Havana tobacco contains two per cent; that of the Nord, six; Virginia nearly seven, and that of Lot, eight. Smokers, by inhaling the fumes of tobacco, introduce into their system a certain quantity (though small) of poisonous matter. Pure nicotine has the appearance of an oily, transparent liquid, of a pale yellow color, which, after exposure, turns to brown. It is very hot to the taste, and its acrid smell slightly resembles that of tobacco; but when volatalized by heat throws out characteristic vapors, which are so oppressive that breathing becomes difficult in a room where a drop of the liquid has been spilt. As a poisonous substance nicotine possesses excessive power. In experiments made about ten years ago, in ten minutes M. Orfila killed many dogs on the tongues of which he had applied five drops of this alkali; with twelve drops death ensued in two minutes. But this powerful poison cannot escape the investigation of men of art. Pure nicotine (according to the conclusions of Orfila and Stas) has certain characteristics by which it is detected as easily as a mineral poison. It can be discovered in the digestive channel, and its existence therein proved, though that channel contain but a few drops. And even when the poisonous substance has been absorbed—when it has passed into the other organs—it can still be discovered in those organs, and especially in the liver. M. Orfila has tried, on the liver of animals poisoned with twelve or fifteen drops of nicotine, two methods of chemical analysis, which he describes, and he has invariably succeeded in procuring certain quantities of the poisons sought for.

M. Stas, by making use of a third method on the body of Gustavus Fougnies, extracted nicotine from the tongue, the stomach, andliquid contained therein; he also found some in the liver and lungs. He moreover obtained it from the wood flooring of the dining room in which Gustave died, although that flooring had been washed with soap, oil, and warm water; and in his learned investigation the Belgian toxicologist had received no indication from the Judge d'Instruction. Before he was informed that Bocarme had been making experiments relative to tobacco and nicotine, he had already found that the poison introduced into the body of the victim was neither sulphuric acid (as had been supposed) nor acetic acid, but either conicine or nicotine.

The progress which medical jurisconsults have made recently, is so great, that poisoning by morphene, strychnine, prussic acid, and other vegetable substances, hitherto regarded as inaccessible to our means of investigation, may now be detected and recognised in the most incontestible manner.

M. Orfila, in closing his notice, might well say,—"After these results of judicial medical investigation, the public need be under no apprehension. No doubt intelligent and clever criminals, with a view to thwart the surgeons, will sometimes have recourse to very active poisons little known by the mass, and difficult of detection, but science is on the alert, and soon overcomes all difficulty; penetrating into the utmost depths of our organs, it brings out the proof of the crime, and furnishes one of the greatest pieces of evidence against the guilty."

For the Scientific American.

The Telegraph Circuit---How the Ground Forms Part of it.

There seems to be a doubt in the minds of many, in tracing the current through the circuit of our present one-wired telegraph; it seems to me to be a very plain case. In looking at the subject, let us take the most simple form, that is, a battery with a few yards of wire connecting the zinc and copper or other metals which may be used; we then have a circuit on which the current travels uninterruptedly. Now let the wire be separated and the ends brought in contact with the opposite sides of a long bar of iron, would not the current pass as readily and rapidly as before; again, if instead of the bar of iron we had a mass of iron as large as a house and the two wires attached near each other on the same side of the mass, or at opposite sides, would not the result be the same? Certainly it would; the current would go from one wire to the other through the conducting properties of the massive iron as easy as the small wire.

Then again, if we were to have a battery upon one side of a broad river or bay and the wire conducted across, but instead of coming back, to have it inserted into the end of a glass tube filled with water of one inch diameter, the tube crossing the river to the battery, and connected to the opposite pole, the water in the tube would form part of the circuit and the fluid pass as free as it would if it had the whole circuit of wire. The same would be the case if the tube was one thousand feet in diameter. Again, we will dispense with the tube, and connect the wire on the opposite side of the river into the water, also the other battery wire into the water on the battery side of the river, would not the current pass through the river the same as it did through the small or large tube? In order to comprehend more fully, let us suppose that Lake Superior was perfectly isolated from all surrounding objects, and a partition through the middle of a non-conductor, so that one half should be isolated from the other, and one end of the circuit wire to be in contact with one half the lake, and the other circuit end in contact with the other portion of the lake, who believes that a current could be sustained?

My own opinion, based on some practice and a good deal of study and reflection, is, that the earth, in its natural and moist state, is a good conductor of electric fluids, and that there is a certain amount of electricity constantly dispersed through it, of the same density at all places. The reason for its being in the same state, is obvious, from the fact that the earth is a good conductor, and the instant there was more electric fluid in one place than in another, this same conducting property would convey it to places of less amount instantaneously.

I do not think that the current of electricity, in its grand circuit, passes on a narrow chain of particles, as it would were it conducted on an isolated wire, but that *all* the particles constituting the ground body of the circuit are invaded, for miles, out of a straight as well as in a right line, the same as it would be if we took a plate of copper or iron one hundred feet or more square, and make it a part of the circuit, it would not be presumed that the fluid would go straight through from one side to the other without affecting the whole plate; it appears to me that the instant the fluid leaves the one wire and enters the plate, the whole plate becomes positive compared to the wire on the opposite side, and with the velocity of lightning it leaves the plate, passes into and through the wire. I think the term absorbed gives us wholly a wrong idea of the facts, as they are the same in a ground circuit, only on a larger scale, that they are in the above-named plate forming a part of the ciruit.

H. W. BENNETT.

Rutland, Vt.

Eccentric Movement of the Fixed Stars.

At a meeting of the Berlin Academy of Sciences held on May 31 last, the venerable Alexander Von Humboldt made an interesting communication upon some observations of singular movements of fixed stars. It seems that at Treiste, January 17, 1851, between 7 and 8 o'clock P. M., before the rising of the moon, when the star Sirius was not far from the horizon, it was seen to perform a remarkable series of eccentric movements. It rose and sank, moved left and right, and sometimes seemed to move in a curved line. The observers were Mr. Keune, a student in the upper class of the gymnasium, and Mr. Thugutt, a saddler both certified to be reliable persons. The family of the latter also beheld the phenomena. Mr. Keune, with his head leaned immovably against the wall, saw Sirius rise in a right line above the roof of a neighboring house, and immediately again sink out of sight behind it, and then again appear. Its motions were so considerable that for some time the beholders thought it was a lantern suspended by a kite. It also varied in brilliancy, growing alternately brighter and fainter, and now and then being for moments quite invisible, though the sky was perfectly clear. As far as it is known, this phenomena has been remarked but twice before, once in 1799 from the Peak of Teneriffe by Von Humboldt himself, and again nearly fifty years later, by a well informed and very careful observer, Prince Adalbert of Prussia.

[Is it not possible that some very subtle matter was the cause of this phenomenon—that it was something like a mirage. If no negative evidence to its correctness can be adduced, it is testimony of the most positive character, that changes may take place with planets in their courses without materially disturbing the harmony of the universe, and in connection with this, it is strong testimony in favor of the miracles of Joshua commanding the sun to stand still, and the shadow going backwards on Hezekiah's sun dial.

Oatmeal.

In Scotland, and some parts of England and Ireland, oatmeal is extensively used as food, and is considered peculiarly nourishing. Oats, before grinding, must be kiln-dried, and for this purpose, when done on a large scale, a cast-iron floor, pierced with numerous small holes, and placed many feet above the fire, is used. On this the oats are placed, and they must be turned several times before the moisture they contain is evaporated. When they are cold, the next process is to shell them, which is done between stones, usually five feet in diameter, free inside the eye, perfectly straight on the face, and capable of making 700 revolutions in a minute. Freestone or sandstone is considered best for the purpose. The oats then pass along a dust sieve into the fans, which separate the seeds and small grains from the good quality, which is removed either by elevators or by hand, into the hopper of the grind-stones. These stones should be five feet in diameter, peon inside the eye, straight on the face, but never grooved like those for grinding wheat. They should make 300 revolutions a minute. A sieve is suspended under the eye, which completely separates the meal from the seeds. To preserve it, it should be tread very hard into a large chest, to exclude the air. It is cooked, by boiling, like Indian meal pudding, and is called porridge. In Scotland it is made into brose by pouring boiling water into it and stirring it about. It is made into cakes by mixing the meal with cold water, rolling it out into thin sheets, and toasting it before a bright fire. It is a food which would not be much relished in America, where wheat flour is so cheap; it is good, however, for those who live in high northern latitudes.

Ship Building on the Ohio.

The Cincinnati Enquirer says that another bark, of 350 tons burden, is now building at one of the Covington ship-yards for the firm of Swasy & Co. She is built expressly for the African trade, and will be ready to sail by the 1st of December. This will make the sixth vessel built in the "western wilds" for the Salem Company.

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Sawyer and Gwynne's Pressure Engine.

This Pressure Engine is for producing motive power by static pressure, using centrifugal force to perpetuate a vacuum, which rep. esents the nominal power of the Engine.

The following questions, applicable to the power and resistance of this engine, were submitted to R. H. Bull, Professor of Mathematics, and were returned with the answers :

NEW YORK, May 8, 1851.

RICHARD H. BULL, Professor of Mathematics : Dear Sir,—We take the liberty to submit for solution the following questions, and solicit your earliest reply. Very respectfully,

N. SAWYER, J. STUART GWYNNE.

1. We have a wheel weighing 531 pounds, the weight collected in a circle of 16 inches diameter : what amount of power, applied 1 2-3 inches from the centre, will be required to cause it to revolve 25 times in 10 seconds. Answer—166 pounds.

2. What will be the centrifugal force when brought up to that velocity. Answer—2,716 pounds.

3. What power will be required to produce the motion as above, if applied to the axis of a screw of the following dimensions : hypothenuse of the angle 10 inches, perpendicular 4 inches, base 9 17-100 inches? Answer—452 pounds.

NEW YORK, May 10, 1851.

GENTLEMEN,—I have examined your questions, and return them with the answers annexed to the questions. Respectfully yours,

RICHARD H. BULL.

To Messrs. Sawyer and Gwynne.

The two first questions require the amount of force necessary to revolve a wheel of given weight and dimensions, also the centrifugal force due to the velocity.

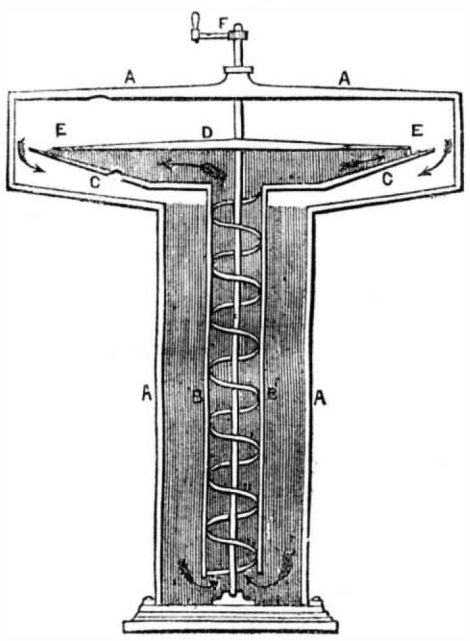
The third question requires the amount of force to be applied to the screw to produce the motion as above.

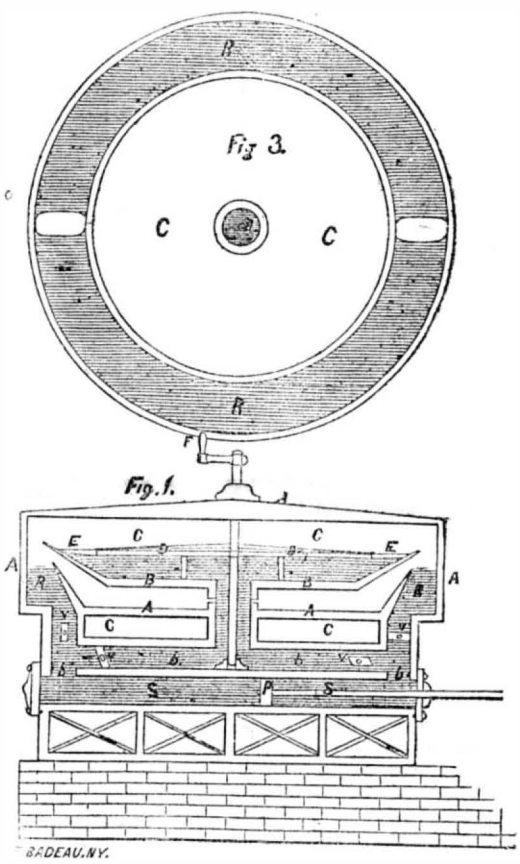
All these questions apply to the accompanying diagrams, where A A A A is a strong cylinder, capable of resisting any required pressure; C C a basin or wheel for evolving centrifugal force; D, a disc and valve covering the basin; B B, a cylinder inclosing the screw; E E a valve attached to the disc, and resting on the rim of the basin; F, is the crank.

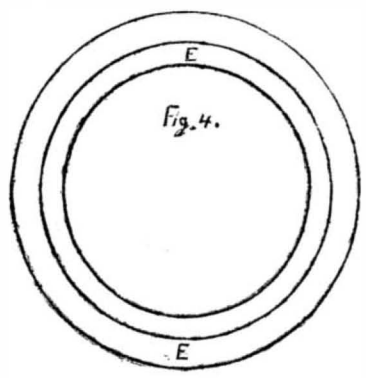
The unshaded part of the diagram is the air chamber, the shaded part contains quicksilver; the quicksilver in the basin or wheel is supposed to be 26 inches in diameter and 2 inches thick, weighing 531 pounds.

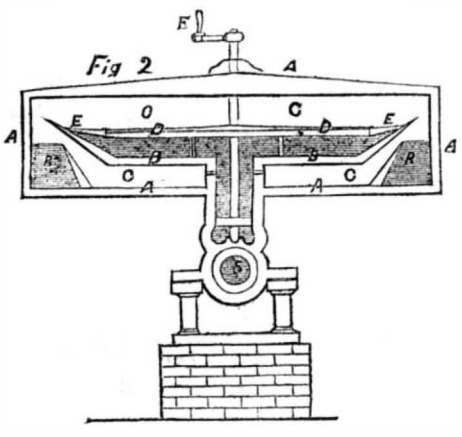
The screw is 4 inches diameter, and of any required length, with a thread of 4 inch pitch, and the space between the threads 4 inches broad and 1 inch deep. The basin, disc, valve, screw, and cylinder, B B, are all connected and revolve together, and, according to Professor Bull's demonstrations, 166 pounds (allowing the weight of the wheel) applied to

No. 1.









the crank, F, will produce 25 revolutions in 10 seconds, and the centrifugal force of the quicksilver in the basin will be 2,716 pounds; and it is clear that the equilibrium in the cylinder will be destroyed to the full amount of the centrifugal force, and a vacuum would be formed at the upper end of the screw, if no quicksilver was allowed to pass up and supply the place. Now, whatever may be the size of the vacuum, it cannot under the ordinary pressure of the atmosphere, be worth more than 14 pounds to the inch, and as the diameter of the cylinder, B B, is 4 inches, and the area 12½, it is clear that the vacuum of 2,716 pounds can only be made available for 187½ pounds; and deducting for the end of the shaft and screw, we have but 10 inches against which the pressure can act.

Now, to make this pressure available to the extent of the centrifugal force, we must pump air or gas into the air chamber, C C, until the pressure on the surface of the quicksilver is 271 pounds to the inch; this, multipled by 10, shows 2,710 pounds pressure upon the first thread of the screw at the lower end. Prof. Bull has further shown that 452 lbs. against the thread of the screw is equal to 166 pounds direct force, leaving a clear surplus of 2,264 pounds more than is required to turn the wheel.

It must be recollected that 166 pounds direct pressure, or 452 pounds against the thread of the screw, is the force required to bring 531 pounds from a state of rest to 25 revolutions in ten seconds, and the weight of quicksilver received in at the centre and discharged at the valve, (allowing no slip on the screw), will be just 531 pounds in 18 seconds. It is clear, therefore, that any force against the lower end of the screw exceeding 425 pounds is a surplus over and above the force required to turn the wheel, and may be applied to other purposes.

It may be proper to add that the pressure of the quicksilver against the lower end of the screw will cause it to rotate upon the principle of the screw reversed.

To show more clearly the adaptation of this principle to all engines where force is applied to one side of a piston and a vacuum formed on the other, we introduce one form of reciprocating engine. The measure of power here adopted is exactly the same as in No. 1; the basin and disc are the same, holding the same amount of quicksilver, and making the same number of revolutions in a minute; the amount received in at the centre and discharged at the valve in 10 seconds is the same, so that the retarding cause apart from friction, is exactly the same as in the rotary screw engine No. 1.

Fig. 1 is a longitudinal horizontal section; A A A A is a strong cylinder, capable of resisting any required pressure; B B is a revolving basin, with disc and valve attached; C C is an air chamber above and below the revolving basin; V V V V are valves for alternating the pressure on the piston; D D D D are channels through which the quicksilver passes from each end of the piston into the basin, and from thence into the reservoir, falling below the compressed air, and again acting against the piston to propel it forward; R R is a circular reservoir for holding quicksilver; S S is a cylinder; P is a piston.

Fig. 2 is a horizontal cross section, in which the same parts are designated by the same letters.

Fig. 3 is the bottom plate of the reservoir and air chamber showing the opening, through which the quicksilver passes to the piston from the reservoir, R R; also the opening in the centre through which it passes from the piston into the basin.

Fig. 4 is a top view of the disc, valve, and rim of the basin; the inside circle is the size of the disc, the middle one the valve, and the outside one the entire circumference of the basin.

The piston of the engine being 4 superficial inches, the pressure 679 pounds to the inch, and the velocity 112½ feet per minute, the effective force will be 6,482 horse powers.

This engine is not only retarded by friction, for which an allowance of 30 per cent. has been already made, but there is a further tax of power to overcome the inertia of the quicksilver, which is constantly received in at the centre and discharged at the valve of the revolving basin. A force equal to 166 pounds applied 1⅔ inches from the centre will be required for this purpose, equal to elevating 166 pounds 135 feet high per minute, and as a horse power is estimated to raise 150 pounds 220 feet high per minute, 166 pounds raised 135 feet high requires ¾ of a horse power, which being deducted from 6,482, gives 5,732, or nearly 5¾ horse power as the effective force of the engine.

The following propositions embrace the principles involved in Sawyer & Gwynne's "Static Pressure Engine;" these propositions offered originally in the Daily Tribune of June 25, in an article entitled "A New Motive Power," signed Stephen Pearl Andrews, in which Professor Loomis, of the New York University, was called upon to demonstrate any fallacies that might exist in them. The propositions are novel and startling :—

1. The power which is applied to the crank of a wheel to turn a wheel, is all taken back again in the rotary momentum of the wheel, minus the friction.

2. The other force which exhibits itself *under the condition of rotation*, which acts at right angles to the axis of motion, and in radial lines from the centre to the circumference, which augments in the tremendous ratio of the square of the velocity, and which is called centrifugal force, is *plus* the momentum and *plus* the power which causes the rotation, is no aid to and no charge upon rotation; and is, therefore, although not hitherto observed as such, an independent law of nature, as much so as gravity itself.

3. Ergo : That the accepted axiom of mechanics, that "by no mechanical arrangement can more power be evolved than is applied to produce the movement," is overturned by the simple phenomena of rotation, and consequently, such surplus power existing, it remains merely the work of genius, with no insuperable obstacles *in the nature of the case*, to find the method of applying this surplus force to mechanical purposes.

4. That stationary pressure is adequate to the production of motion in a fluid, and consequenly to the generation of power, as in the case of a reservoir exhausted with a given rapidity by a syphon, and re-supplied with the same ratio from another source.

5. That the combination of these two principles, as proposed by the inventor of the machine mentioned above, as explained by him at 300 Broadway, and as exhibited in the diagram is adequate to the production of a motive power only limited by the strength of the materials to endure pressure, and capable of every variety of mechanical application.

STEPHEN PEARL ANDREWS.

Bookbinding in the Olden Time.

It was not to gold and precious stones alone that the bindings of books in former days were indebted for their beauty. The richest devices of the needlewoman were often wrought on the velvet or brocade, which became more exclusively the fashionable material for binding. This seems to have been a favorite occupation of the high-born dames about Elizabeth's day; and, indeed, if we remember the new-born passion for books, which was at its height about that time, we shall not wonder at their industry being displayed on the covers as well as the insides. But, unhappily, the fragility of the work was equal to its beauty, and these needle-worked covers have, in many instances, been replaced by more substantial binding.

Chinese at San Francisco.

The British bark Mahommed Shah, fifty-nine days from Hong Kong, arrived at San Franisco, on the 10th of May, with two hundred and twenty-eight Chinese; and on the 12th, the Swedish bark Antelope, sixty-one days from Hong Kong, brought one hundred and seventy of the "pig tails."

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New Inventions.

New Bolt Heading and Screw Cutting Machine.

Mr. John Van Brocklin, of Middleport, Niagara Co., N. Y., has invented and applied for a patent for improvements in machinery for heading bolts, cutting the screws, &c. He employs heading boxes or peculiar shaped dies operated by a rack and pinion, instead of the hand levers which are in common use. The ends of the dies are made to act as guides to cause the holding and heading boxes to assume their exact positions before the descent of the heading tool, which is a piston header or swage. The action is such, that in heading one common evil is remedied, viz., the forcing of the metal apart by the force of the heading tool. In connection with the heading of the bolts, there is a gate on the machine for cutting the rods the proper length; also an arrangement similar to a lathe, to which may be attached a chuck for screw cutting.

Van Brocklin's Screw Plate.

In connection with the above, Mr. Van Brocklin has invented a new and improved plate for cutting screws, for which he has applied for a separate patent. The improvement consists in a cheap and expeditious mode of constructing the plate, by which the dies are made to work nicely and evenly in their grooves or recesses within the plate. He is enabled, by the improvement, to use those made of thin steel bars with cutting edges presenting a comparatively small bearing on the rods. Screws can be cut upon rods of various sizes, from the extreme large to the extreme small. The dies are guaged by set screws passing through the edge of the plate.

Machine for Boring Conical Holes in Hubs.

Mr. Daniel Belden, of Berlin, Connecticut, has taken measures to secure a patent for an improved machine for boring tapering or conical holes in the hubs of wheels, &c. The hub is made to revolve between two plates towards a stationary horizontal rod to which is attached a cutter and cutter gauge. The hub and its plates are kept revolving in proper position by a collar fitting on the back plate into a recess in a disc attached to a socket, in which is a slide operated and adjusted by set screws for the pupose of throwing the cuter rod to cut conically through the mandril hole of the hub. This cutter rod has the cutter so fixed that it feeds when the hub is turned, the hub gradually moving along on the cutter rod till the tapering hole is cut through the hub. The said hole can be cut more or less conical according to the oblique direction given by the slide spoken, of to the cutter rod.

New Rat Trap.

A friend of ours, writing from Cincinnati, says he has invented a new rat trap, which he verily believes is the *ne plus ultra*, for taking, in a most coaxing way, the most grevious and cunning rascals of the rat race. He has a small box about 20 inches long, open at both ends for Mr. Rat to take a gallopade through, he being a gentleman who likes to see both ends of the road clear. No sooner, however, does he reach the middle, allured perhaps by a sweet savory morsel, than down goes his apple cart with the lightest tread of his foot, and all unexpectedly he finds himself in safe keeping.

A New Kind of Hemp.

Attempts are now making to introduce into France the culture of a gigantic kind of hemp, indigenous in China, where it is raised in large quantities, and is known under the name of Lo-Ma. Hitherto the French growers have not succeeded in bringing it to seed, the plant requiring a warm climate. The yield is twice as great as that of the ordinary hemp. It stands frost well.

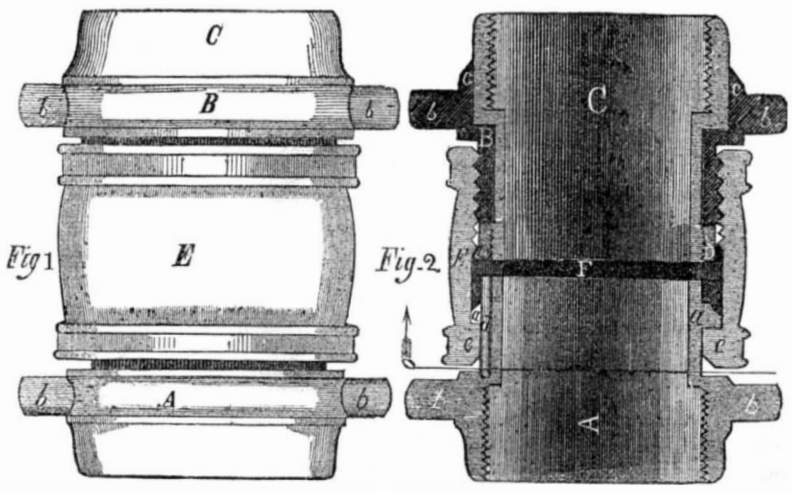
Railroad Car Ventilation---Keeping the Dust Out.

Last week we had the pleasure of examining the model of a new invention of Mr. Hekroth, formerly of Maryland, but now of this city, for the better ventilation of railroad cars, and to prevent dust and smoke getting into the windows. The object of Mr. Hekroth is to bring the current of air, displaced by the passage of each car through the atmosphere, to act in such a manner as will produce a superior counter current that will resist the passing of the dust into the windows of the cars. The plan has been successfully tried, and we know of no invention so much needed at the present moment.

Incrustation in Boilers.

We learn from our worthy cotemporary, the London Patent Journal, that a Mr. Babington, M. D., London has taken out an English patent for the prevention of incrustations in boilers, by employing zinc plates in them. He solders plates of zinc on their edges, to the plates of the boiler under water mark. 1-15 of the internal surface under water is to be covered with the places of zinc. The zinc is more oxidizable than the iron, so the latter is protected from the incrustations, while the former oxydizes. Galvanic electricity is generated and good results have been obtained. We do not like the plan however, it would be cheaper to get a copper boiler at once.

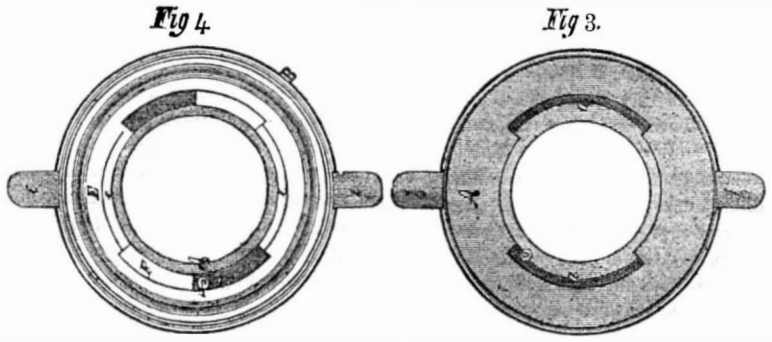
IMPROVED COUPLING FOR HOSE, &c.



The accompanying engravings represent the new coupling lately invented and patented by J. W. Osgood, of Columbus, Ohio. Figure 1 is a side elevation; figure 2 is a longitudinal section; figure 3 is an end detached view of the part marked A, seen from the inside, and figure 4 is a transverse section of the coupling, taken in the direction of the line *o o*, figure 2, and viewed as indicated by the arrow. The same letters of reference denote similar parts throughout the several figures.

The nature of this invention, is the use of a box, into which one hose or pipe may screw or be fitted, formed with projecting lips, which enter between, and lap inside corresponding lips projecting at one end from the interior of a connecting nut, which has a female screw at its other end, into which screws a second box containing an interior box that may smoothly turn in it, being of an enlarged diameter at its outer end, which serves as a collar, into which may screw or be fitted a second hose or pipe, and the other end of the interior box having a screw cut upon it, to which screws a loose ring or collar that serves to keep the interior box from drawing out.

A is one box forming the coupling; it consists, in its length, of two diameters, the part nearest the outer end being made larger, with lugs or projections, *b b*, for turning by, on its exterior, and a female screw in its interior, at the mouth, into which a hose or pipe may be screwed; the smaller end of the box, A, has lips, *a a*, projecting from it, each lip forming, as it were, part of a flange, and a stop pin, *d*, inserted near the end of one of them, running lengthwise with the box, A. B is a second box, also of different diameter, having an annular space, *c c*, at its mouth, and lugs, *b b*, for turning it on its exterior, by a screw cut upon its inner or smaller end. C is an interior, also of two diameters, its mouth or larger end being of some diameter as the annular space, *c c*, in the outer box, B, into which it fits, and a female screw within it for attachment of a hose or pipe, and its inner or smaller end having a screw cut upon its extremity, and being of the same outside diameter as the bore of the box, B. D is a loose ring or collar screwing on to the smaller end of the box, C, and serving to keep it from drawing out. E is a connecting nut, one end of which screws on to the smaller end of the box, B, and the other end formed with lips or part flanges, *e e*, similar to the lips, *a a*, of the box, A, but projecting inward, and of a length corresponding to (or rather less than) the spaces or distances between the lips, *a a*, so as to enter



between them; the bore of the nut, E, being of the same length in diameter as a chord measuring the distance between the outer circumference of the lips, *e e*, being corresponding to the external diameter of the smaller end of the box, A. F is a washer or ring of india rubber or other elastic material, situated within the nut, E, and inserted between the box, A, interior box, C, and ring, D, screwed upon the box, C, and serves to keep the coupling tight or free from leakage when screwed up and locked.

The operation of this coupling is as follows:—Separate hose or pipe being screwed into or otherwise attached to the boxes, A and C, the two hose or pipe may be united by inserting the lips, *a a*, of the box to which one hose or pipe is connected between the lips, *e e*, of the nut, E, and when inserted to the proper depth, turning the box, A, or nut, E, until resisted by the stop, *d*, so that the lips, *a a*, will lap within or against the lips, *e e*, and so lock the coupling, the washer or ring, F, preventing leakage or escape between the spaces left by the several lips, and keeping the coupling tight, which may be screwed or tightened up by turning the outer box, B, which will revolve on the interior box, C, by drawing up the conneeting nut, E, and will firmly unite the coupling without twisting or turning the hose or pipe, so that the coupling may be formed with little labor or loss of time, which is very advantageous where connections are required to be made and broken frequently and quickly, as for instance, in coupling fire engine hose, where, with the ordinary form of coupling, the screws are liable to be damaged or clogged with dirt, thereby causing great delay, which is prevented by this improved construction, as the threads or screws are kept free from exposure to dirt or injury, and the connection quickly formed, the several screws, whether the coupling be joined or separated, being kept always united and hence protected, while the screws, being constantly in contact, the time consumed by the ordinary methods of attachment in establishing the coupling, will be considerably economized.

The claim of the patent will be found on page 294.

Application for an Extension of Patent.

Washington, June 25, 1851.—On the petition of Nathaniel Adams, of Cornwall, New York, praying for the extension of a patent granted to him for an improvement in a machine for moulding and pressing brick, for seven years from the expiration of said patent, which takes place on the 8th day of September, 1851.

It is ordered that said petition be heard at the patent office on Tuesday, the 2d day of September, 1851, at 12 o'clock M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposed to the extension are required to file in the patent office their objections, specifically set forth in writing at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

R. C. Weightman,
Acting Commissioner of Patents.

Value given to Cotton in its Transformations.

The enormous value given to cotton in its various transformations, is shown in the article of lace, of which there is at the London exhibition, doubtless, a richer display than the world ever saw together before. India, France, Belgium, England are vieing for supremacy in this manufacture. A manufacturer furnished samples of one pound of cotton spun into 900 hanks, of 840 yards each, making a distance in all of 430 miles, should the single thread be extended to its utmost. Another firm exhibited 4,200 hanks, of the same number of yards each, from a single pound of cotton. The first then exhibited one pound of cotton spun into a thread 2,000 miles long, which shows the perfection to which cotton machinery has arrived. Brussels lace, all made from cotton is exhibited, worth £200 sterling ($1,000) per yard. A lace shawl, made in France for the Duchess of Sutherland. is exhibited, the cost of which is £1,000 sterling. A bridal dress is shown, for which the owner wants £5,000. The girl who wrought at it the first three years became blind from the heavy task it put upon her eyes. Just think of simple handiwork enhancing the value of a shilling's worth of cotton to $25,000!

Receipt for Making M. de Baeuvillier's Wash-Compound.

Take 1 gallon of lye, 20 lbs. common hard soap (cut fine), 1 quart spirits of turpentine, 1 pint spirits of ammonia (strongest); dissolve the soap in the lye, over a slow fire, but not allow it to boil, and stir frequently, after which set it aside to cool adding the ammonia and turpentine. This makes hard soap, and should be kept well wrapped in paper to keep the ammonia from evaporating. The lye is made by dissolving 1½ lbs. of potash in 1 gallon of soft water.

The above receipt I have used, and find it an excellent soap for household use, and if you choose you may publish it. I purchased it as a patented affair, but have made some alteration in it, I think for the better. I was swindled out of my money so far as the patent was concerned. S. R. D.

Schuylkill Haven, Pa., July, 1851.

Baltic Steamship.

This noble steamship arrived at this port from Liverpool on the afternoon of last Saturday, 5th July, at 5¼ P. M., she left Liverpool on the 25th June at 6½ P. M., thus making the passage in less than ten days, the second best that ever has been made this way.

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Scientific American

NEW YORK, JULY 12, 1851.

Our Country.

Last Friday was the seventy-fifth anniversary of our nation's birth-day. Only three-quarters of a century have passed away since that immortal instrument, "The Declaration of Independ ence" was signed by the revolutionary fathers and given to the world, and what changes have taken place since then. The colonies then were only thirteen in number, with a small although not a feeble population. Then they were engaged in a struggle for life or death with Great Britain, the most powerful nation in Europe. The contest was severe, but the Ruler of Battles crowned the efforts of the Americans with success. "The handful of good grain which was then shaken upon the mountains," has brought forth a most beautiful harvest. The States have more than doubled in numbers, and the inhabitants have had an eight-fold increase. Our territory has also been greatly extended, and in wealth and power we are second to no nation in the world. This is surely something wonderful to behold, and marvellous in our eyes.

In science and art we occupy a most dignified place among the nations. We have the longest canal, the longest railroad, and the longest suspension bridge in the world. For inventions, our countrymen are widely celebrated. Russia, the greatest of despotic governments, has come here for engineers to construct her railroads and locomotives.

Before the revolution, however, our country was distinguished for philosophy, genius, and skill. She had her Franklin in philosophy, her West in painting, and her Rittenhouse in mechanical skill: These great men have been succeeded by a worthy progeny, and onward, onward rolls the tide of American discovery.

We have many advantages over other nations. Here the skillful European comes a full grown man, with all his art along with him, and here commingle the inhabitants of every nation, comparing their skill, choosing that which seemeth best, and laying aside that which is most defective. It would indeed be a wonderful thing if we did not progress in science and art faster than any other nation. With our advantages and resources, the future is brilliant with hope. We speak principally of inventions, because that is the field in which we labor. When we look back upon the great number of discoveries which have been made, the question often arises "surely we are near the end of invention—there must be a limit to human discovery." No doubt there is a limit to the human mind, but that limit is the boundary of thought, and what geometer has yet been able to measure that mighty span? In twenty-five years more, our country will have arrived at its first century. Great changes will take place during the intervening years, as there have during the past. The railroad and telegraph, and many other great inventions, belong to the last twenty-five years. To you, our inventors, are committed the future great improvements which are to benefit our country and our fellow-men.

Motive Powers--Centrifugal Force.

On another page will be found a description of the engravings of what some have been pleased to term "a new Motive Power." It has been our fortune to demonstrate the folly of more plausible inventions—(but we cannot see any invention about it except what is claimed for it) than this. None of the remarks on the page referred to are from us. The concluding remarks, with the name of Mr. Andrews attached, we saw when they appeared, and were sorry to see them. The letter was addressed to Prof. Loomis, and was a very unbecoming one. There are many people who seem to consider that men of science are public property—that they must talk and reason with all persons who choose to call upon them; and if they do not do so, the first thing we see is an attack upon them in some newspaper, where the details of some private interview are paraded before the public with ungentlemanly gusto. This should not be, but it has been.

We have been told by one gentleman, that the new power claimed "was old and well known to geometers, but, until now, was never reduced to mechanical practice." By another we were told that 'the old theories are exploded, and that this is a new discovery in toto." We propose to show, briefly, that it is opposed to sound knowledge—was never known to any "natural philosopher," dead nor living,—that it never will be—that it is a delusion.

And, first of all, let us say that Prof. Bull has certainly made a great *bull* in his first answer. The question is asked him how much power is required to give a certain weight a certain velocity, in a certain direction, and he says, so many pounds. He might more intelligently have said, "one hundred and sixty-six potatoes." There is no power in mere weight: mechanical power is the weight multiplied into its velocity; apart from velocity, one pound is just as great a power as one thousand. .As dead weight cannot generate a velocity, it cannot create a centrifugal force, nor move a screw one single hair's breadth.

But let us deal with the main error, for that of Prof. Bull is small in comparison with it. We mean the "*new* motive power." What is this? Nothing less than that when a body receives motion in a certain direction, a new force is originated, termed a centrifugal force, and this power is said to be *plus* the power impressed upon it. Here is what is said, "it takes a certain power to give velocity to a wheel, and in giving this motion, a new force originates, and there is a power in the wheel greater than the impressed power." When we interrogated the inventors about where this power came from, we were told they could not tell any more than we could, where the law of gravity comes from. Let us show how ridiculous the assertion and claim is. Gravity is well known to be a property belonging to all bodies—they mutually attract according to their quantities. Gravitating force, then, is a property belonging to all bodies, but is this "new motive power"—this plus centrifugal force—claimed to be a property belonging to all bodies? No such thing. It does not even belong to a body moving in a right line. According to the new discoverers' ideas, a body may move in a right line till doomsday without generating this plus of the impressed force, but no sooner is it made to move in a curvilinear direction, than this new tremendous force is originated. This brings the whole new theory to the *reductio ad absurdum*, "a line of direction begets a force." This is the logic of the matter; as well might it be said, a pure geometrical line can beget a concrete; a circle a sphere; (like the absurd theory of Smith), nothing beget something; the path of a planet its moving force; the railroad the moving force of the locomotive.

But if the inventors of the "new motive power"—this tremendous centrifugal force—do not know where it comes from, we do, and it is not *plus* the momentum.

All bodies at rest have a tendency to rest, and cannot move of themselves; a body at rest can only be moved by some foreign force out of itself. All bodies in motion have a tendency to move forever in a straight line. Power, or momentum, is the whole quantity of a body multiplied into its velocity. These are the well understood and eternal laws of mechanics. We know some people think that whatsoever is said to be new must be true; whatsoever is said to be old, erroneous; but truth is immutable, however old. By the laws we have laid down, and they are those laid down by all natural philosophers, and every teacher of engineering, no body in motion can give out a greater power than that impressed upon it, and direction has nothing to do with the power. A body moving in a right line has as much total force as one moving in a circle. What is it that makes a body rotate? The mechanical properties of an axis. The reciprocating motion of a piston is converted into rotary motion by a crank, and every revolving body has two forces acting upon it: one is the centripetal, the other the centrifugal. The centripetal force is that which bends the reciprocating force of the piston rod out of its rectilinear direction, and this is the axis. The centrifugal force, then, is nothing more than the rectilinear force bent out of its natural road by the axis or centripetal force. Centripetal force is not the exclusive property of a wheel or disc: it is displayed in the governor of the engine, the whirl-round of the old toll-gate, two arms on an axis; in short, anything which has an axis.

Those who have honestly believed there was something in this alleged discovery, have been led into error by looking to the centripetal as the natural line of direction of the impressed power, instead of the centrifugal. Another cause is, that centrifugal force increases with the square of the velocity, and they could not see how this could happen unless the power originated in the moving body. A very little learning would have enabled them to see into this, for it could not be otherwise, and it plays the bowls into our assertion, that the centrifugal is just the rectilinear force which has been bent out of, and seeks its natural line of direction. To give a moving body a double velocity, it requires four times the original force impressed upon it triple the velocity, nine times the force: this is a well-known law of mechanics. If the centrifugal force increases according to the square of the velocity, the velocity is increased at the expense of an increase of power according to the square. Here, then, we have a balance of forces: it is thus expressed, $CV2^2=4$; centrifugal force increased with the square of the velocity; $RV2^2=4$. C $V3^3=9CV$; $RV3^3=9PV$. Gentlemen, do you not see how these things balance—how they accord with those laws recognised by natural philosophers and all the engineers of sound and correct views; it cannot be otherwise.

We have been told that Mr. Allen, of the Novelty Works, had expressed himself as a convert to the new theory; if he has we are much mistaken. We might say a great deal more on the subject, but will conclude by merely saying to the assumptions in the Tribune letter, that *stationary pressure*, by syphon or anything else, would not empty the Croton reservoir in ten centuries.

Coal the Cause of England's Greatness.--The Future Greatness of the United States.

During a brief sojourn of that eminent geologist, Hugh Miller, in England, he critically examined the carboniferous districts, especially the coal fields of central England, to which she has for so many years owed her flourishing trade. Its area, he remarks, scarcely equals that of one of the Scottish lakes—thirty miles long and eight broad; "yet how many steam engines has it set it motion? How many railway trains has it propelled, and how many millions of tons of iron has it raised to the surface, smelted, and hammered? It has made Birmingham a great city—the first iron depot of Europe." "And if one small field has done so much," he says, "what may we expect from those vast basins laid down by Lyell in the Geological map of the United States? When glancing over the three huge coal fields of the United States, each surrounded with its ring of old red sandstone, I called to mind the prophecy of Berkely, and thought I could at length see what he could not, the *scheme* of its fulfillment. He saw Persia resigning the sceptre to Macedonia, Greece to Rome, and Rome to Western Europe, which abuts on the Atlantic. When America was covered with forests, he anticipated an age when that country would occupy as prominent a place among the nations as had been occupied by Assyria and Rome. Its enormous coal fields, some of them equal in extent to all England, seem destined to form no mean element in its greatness. If a patch containing but a few square miles has done so much for central England, what may not fields, containing many hundred square leagues, do for the United States?"

"Westward the course of empire takes its way."
The four first acts already past;
A fifth shall close the drama with the day,
Time's noblest offspring is the last."

By the latest news from California, San Francisco had been nearly all re-built and gold was as plenty as ever.

American Watered Silks.

American watered silks are possible and exist. For generations, the manufacturers of France alone, had the knowledge of the art of giving silk the power of reflecting the rays of light, like the waves of a gently undulating surface of water; and even now, in England, the art of watering silk can hardly be said to exist. But in America, in Boston indeed, within a few months, experiments have been made upon ribbons, which have resulted in perfect success. The long experience of Lyons is now equalled by a Boston manufacturer. The art of watering silk is the discovery of Mr. Samuel Edgerly, one of the firm of Tilt & Co., of Milk street, whose silk factory is upon Tremont road. After years of study, and some experiments, he is now able to turn out watered silk ribbons, so beautiful and perfect, as to pass for French ribbons, even when inspected by ladies who are expert in matters of taste. In their factory, during something like a year, beautiful and substantial plain-woven ribbons have been made, and also those of various ornamental devices. Now ingenuity has triumphed, and to-day our country in the World's Fair, could exhibit as fine watered silks as will grace that great museum from older lands.—[American Cabinet.

[Bah, this art has been known and practiced in America for twenty years. We described and published the process of "watering silks" five years ago.

Does the Moon Influence the Weather.

From remote ages, a traditionary opinion has prevailed among the rude—and civilized too—people of all nations, that the moon influenced the weather. A few years ago, the French astronomers reported against this opinion as a fallacy, and the question was thought to be settled, but in the July number of the American Journal of Science and Arts. Mr. J. W. Alexander contributes a short article on meteorological coincidences, in which he states as the result of a long continued series of observations, "that the third day before the new moon regulated the weather on each quarter-day of that lunation, and also characterized the general aspect of the whole period. Thus, if the new moon happened on the 26th of May, 1851, the term day was the 24th of May; the weather on which the 24th of May determined what was to be on the 26th of May, and on the 3d, 11th and 19th of June, the quarter days respectively of that lunation." This is an important discovery, and shows that the influence of the moon is appreciable, contrary to the generally received opinion among the learned.

The Moustache.

A correspondent of the United Service Gazette says:—"Sir,—I have lately seen in the two military journals several letters advocating the growth of the moustache for infantry regiments. I must go further and suggest it to be worn by both army and navy, if it is possible to overcome our national prejudices. I advocate it from no foppish freak, but from a sanatory motive, as conducive to the health of all those who are exposed to night dews and vicissitudes of climate. I advance these opinions in consequence of having been in an expedition where many were carried off by a malaria fever, caused by the land being irrigated and sleeping under canvass. It was observed by the medical officers, that with those who wore the moustache it assumed a less malignant type. I believe it was said that the hair on the lip protected the nostrils, and caused the air to be rarified before it reached the lungs; however, I do not feel competent to explain the exact cause of the action, but that they suffered less, and I feel certain that what Providence gave for some wise purpose was never intended to be displaced by Birmingham razors.

[We don't know but we shall yet have to knock under to the whiskered furiatios. Here they have brought science to strike us a keen back handed whack; but, friend, we would say, what kind of a case would you make out of our Indians and their squaws, who scorn the moustache, and yet laugh at fever and ague. At the present moment the moustache is very common among the light heads.

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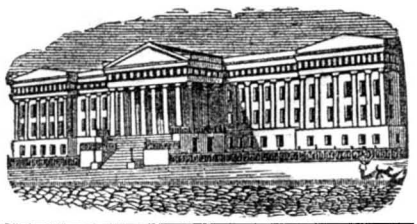

☞ Reported expressly for the Scientific American, from the Patent Office Records. Patentees will find it for their interest to have their inventions illustrated in the Scientific American, as it has by far a larger circulation than anyother journal of its class in America, and is the only source to which the public are accustomed to refer for the latest improvements. No charge is made except for the execution of the engravings, which belong to the patentee after publication.

LIST OF PATENT CLAIMS
Issued from the United States Patent Office.
FOR THE WEEK ENDING JULY 1, 1851.

To Wm. Hinds, of Otsego, N. Y., for Vice Saw-Set.

I claim constructing a vice for the purpose of compressing saws to be set or filed, in the following manner, namely, with only one supporting arm to each jaw, hinged at their lower extremities, and having an extra arm on one side of and parallel, or nearly so, to said supporting arms, to the upper extremity of which is attached an eccentric lever, or its mechanical equivalent, for compressing the two jaws together; constructed substantially as herein described.

To Washburn Race, of Seneca Falls, N. Y., for arrangement of catches on the upper sash, operated by moving the lower sash.

I claim the arrangement herein described, of the catches and window sashes, for the purpose described.

To Benj. Kraft, of Reading Pa., for improvement in Boxes and Axles for saving oil.

I claim causing the bevelled edges of the oil box to enter the grooves of the axle and rest against their outer shoulders but not against their inner ones, thus at the same time preventing end play, and the escape of the oil—the journal bearing being lower than the bevelled edges of the oil box, and sufficiently above the bottom of it, to prevent oil coming from the box to the journal.

To Henry Whitney, Jr., of Cambridge, Mass., for improvement in Inkstands.

I do not claim the invention of the elastic diaphragm for inkstands, but I claim my inkstand as a new article of manufacture in which the following features are, for the first time associated, viz., an elastic diaphragm covered and secured from injury, by a metallic cap, regulated by a screw passing through the cap, and in combination with the diaphragm, the funnel stop, and waste cup.

To J. B. Wickersham, of New York, N. Y., for improvement in Iron Fences.

I claim the manner herein described of securing the rails of iron fences, by means of sectional or divided parts, having slots therein, which are so arranged that, when in place, they break joint with each other, the slot in one section, extending upward, and the slot in the other downward, so closing the slots, as to prevent the rails, which have a loop, or dead eye, turned on each end for that purpose from passing through or coming out as herein fully set forth.

To H. W. Sabin, of Canandaigua, N. Y., for improvement in Bedsteads.

I claim the knuckle joints for holding the rails of the bedstead together, in combination with the rods, substantially in the manner and for the purpose described—said rods being also employed to support the slats forming the bottom of the bedstead.

To J. P. Paine, of Worcester, Mass., for improvement in Spectacle Frames.

I claim the combination of the spring andcy linder, with the temple bow and the glass frame, the whole being substantially as described.

To A. Palmer & S. G. Williams, of Brockport, N. Y., for improvement in Grain Harvesters.

We claim discharging the cut stalks and heads of grain from the platform by means of the combination of the rake with the lever, and the co-operation therewith of the series of teeth on the face of the wheel, and the inclined rail rising above the curved guard of the platform, substantially in the manner set forth.

To A. E. & D. Lazell, of Chickopee Falls, Mass., for improvement in Bread Cutters.

We claim the use of a series of knives or cutter, made in the form of eccentric circles or scrolls, with the cutting edge on the periphery, so as to represent a spiral line or curve, when combined with the bars or ribs of the bed piece, which serve to sustain the loaf, and also to guide the knives, and with the fingers or prongs which hold the loaf against the knives, whilst cutting, and also act as outside guides, when the whole is constructed, arranged, combined, and operating substantially as described.

To Michael Miller, of Rochester, N.Y., for improvement in Pianofortes.

I claim the spring acting on the valve in combination with the weight of the key resting on the valve for the purposes substantially as described.

To Daniel Barnum, of the County of Philadelphia, Pa., for improvement in machines for making Hat Bodies.

I do not claim the combination of a picker and chamber, having an aperture for the admission of air—such a combination having long been known and used for opening and cleaning the fibres of fur. Nor do I claim the combination of these with a perforated exhausted former, such a combination having been referred to in an application for a patent by T. R. Williams, in 1840, though it was not then claimed as his invention. Nor do I claim the use of water to harden or to wet the hat body, such use being as old as the felting process. Nor do I claim the hardening of a hat body on a cone, such a process having been described and patented to Wells, James & Peck, in 1837, they using a solid cone, upon which a web was wound to form the body, and numerous jets of steam were used to harden the same, or to wet it, as it was wound on the cone, there being no exhaust, and processes for hardening bodies on a perforated cone, have also been described in 1840, by Williams, and by Wells in 1846, they both using water pressure to hold the fibres, while the cone and fibres are immersed. Nor do I claim any of the parts as my invention, except as they are used in new combinations, and producing new and important results.

But I claim the exhausting and suspending fan, with its casing and aperture, constructed, arranged, and operated substantially for the purpose described, in combination with the picker and chamber, perforated exhausted former, and exhaust fan, arranged substantially as described and shown, by which arrangements and combinations the several parts, or their equivalents, perform their several and combined functions in a better manner, and produce better results than has been heretofore attained, without any chamber, trunk, or tunnel, or any other means, to control the fibres after being suspended in the air by the fan, or between the fan and perforated exhaust cone, or former, substantially as described.

I also claim the combined action of the currents of air and the currents of numerous jets of hot water, in the hardening or wetting process, the currents of air performing the triple duty of holding the fibres of the former, and of aiding the water to penetrate the hat body, and at the same time to carry the surplus water through the perforations into the exhaust, thus effectually preventing injury to the hat body, from the accumulation of the surplus water to wash it, while the wetting or hardening process is greatly facilitated, and the perfection of the work is secured, the whole process being accomplished by the combination of the several parts named, or their equivalents, for producing the currents of air and water, with the perforated former over the exhaust in the manner and for the purposes substantially as described.

The effects of these improvements are the production of a machine combining the best means for opening fibrous materials and suspending them in the air, surrounding a perforated and exhausted former, and also of a new combination of means for hardening the fibres, and completing the process, without removing the hat or applying any pressure, preparatory to the suspension of the pressure of the air, by which means a great improvement is effected, as well in the forming of the hat and in the process of hardening as in the facility of operation, the whole being, by combination of machinery, heretofore unknown.

To T. R. Bailey, of Lockport, N. Y., for improvement in Lathes.

I claim controlling the poppet centre, so that it releases itself after the turning is finished, by connecting it with a sliding bar, having a weight, or its equivalent attached, and carrying a ratchet, which is held by another ratchet attached to the stationary bed, the said catch having an arm attached, which is struck by part of the cutter head, after the cut is finished and released from the ratchet, substantially as shown.

[See engraving in No. 25, this Vol.]

To D. W. Eames, of West Turin, N. Y., for improvement in running gear of railroad carriages.

I claim the employment of wheels in any number of pairs attached, on either side, to the truck, or frams of railway vehicles, and set at any inclination to the horizon, converging to a point, in or below the rail, so that both wheels of any one pair will rest or travel on opposite sides of the upper surface of either one or the same rail, essentially as described.

To Charles Atwood, of Derby, Conn., for improvement in wire Hooks and Eyes.

I claim, first, the addition of side springs to the common forms of hooks and eyes, substantially in the manner and for the purposes set forth.

Second, I claim the small ridges, or elevations on each side of the beak of the hook, made by bending the wire of the side springs, or by other means equivalent thereto, for the purpose set forth.

Third, I claim the jews-harp form, or partly circular eyelets, extended to form loops adapted to receive tape, in connection with the small elevations, to keep the tape in its proper place, substantially as set forth.

To John Crum, of Ramapo, N. Y., for improvement in machinery for Cutting Files.

I claim connecting the file blank to be cut, with a bed, which has a positive feed motion, substantially as described, in combination with an incidental rolling motion, depending upon the shape of the blank and the angle which the cutter forms therewith, substantially as described.

I also claim connecting the chisel with its stock by a joint, as described, by which they are rendered self-adapting, as described.

I also claim holding the file down on to the bed, during the operation of cutting, and near to the cutter, by means of a roller or its equivalent, combined with the rolling bed, substantially as herein described, but this I only claim when the end of the file is so connected with its bed that it shall be free to move up and down, that the pressure of the roller may keep that part of the file that is being cut, firmly down on to the bed, as herein specified.

I am aware that before the date of my invention, the cutter of file cutting machines has been jointed to a helve or bar, but in such cases it has not been combined with a rolling bed, and therefore I do not wish to be understood as claiming, broadly, the making of the cutter with a joint, but to claim this only, under the limitations pointed out above.

I am also aware that the file blank has been made to slide, during the feeding motion, over a rolling bed, to adapt the transverse plane of the file blank, to the line of the cutting edge, for cutting the different ranges of teeth, and, therefore, I do not wish to be understood as claiming, broadly, the employment of a rolling bed, but to claim such rolling bed, when made to move with the file, during the feeding motion from end to end, under the limitations specified.

To L. F. Cavanaugh, of Newfield, N. Y., for improvement in Handles of Brushes and Brooms.

I claim the lever jaws held together by the head piece of the screw, in combination with the conical end of the handle, substantially in the manner and for the purpose set forth.

To F. P. Dimpfel, of New York, N. Y., for improved arrangement of the Steam Engine.

I claim the method described, of connecting the steam piston of a steam engine with the crank thereof, by means of a piston rod, fixed crosshead, side bars, forked connecting rod and belts, or the equivalents thereof, these several devices being arranged and operating substantially as set forth, in such a manner that the cross piece of the connecting rod, which is placed transversely to the crank shaft, shall be on opposite sides of the axial line of said shaft, at opposite extremities of the stroke of the piston.

I also claim the belts, or gimbal rings, or the equivalents thereof, arranged substantially as set forth, for the purpose of transmitting the movement of the crosshead to the connecting rod of a steam engine.

(For the Scientific American.)

Practical Remarks on Illuminating Gas.

[Concluded from page 334.]

Oil and rosin gas establishments, we must admit, are sources of great nuisance; the chief cause of which is the soot or lampblack which escapes while cleansing and renewing the retorts, and in the former works the odor of the volatile oil, and other animal matter undergoing decomposition, is exceedingly disagreeable.

There are not a few persons who entertain a belief that the gas contained in the gas holder will explode if any lighted material be brought in contact with it; and many prejudices have been grounded upon this belief, although it is perfectly absurd; if a lighted candle were to be thrust into a vessel containing carburretted hydrogen gas, it would be extinguished as readily as though it were immersed in water. Gas cannot burn without a supporter of combustion.

In almost all loaclities where coal gas works have been established, the land in the immediate vicinity has enhanced in value, and persons living in the neighborhood suffer no inconvenience whatever. I have alluded to this subject for the purpose of aiding if possible the formation of a right feeling towards this matter, and to set at rest all fears of nuisance wherever a coal gas establishment is projected. If people would thoroughly understand this matter before they speculate upon the probable inconvenience arising from it, much valuable time would be saved, and much ignorance remain undetected.

J. B. B.

This article concludes the series on gas and gas lighting. They are the most valuable ever published on the subject in our country, and will be used for reference as standard authority. They are from the pen of Mr. J. B. Blake, gas engineer, Boston, and exhibit a scientific and practical acquaintance with the subject.

Patent Office Report.

As the Report of the Patent Office for 1850 is not yet published, the following statistics of that Office will be of great interest to our inventors. We are obliged to Mr. C. D. W. Lawrence, late Chief Clerk, for the same—a gentleman who filled the office with ability and integrity.

Statement of amount of fees received and number of applications and caveats filed during each month for 1850:

	Cash.	Applications.	Patents.
Jan.	8,777 47	239	60
Feb.	7,239 26	176	60
March	8,119 43	196	38
April	6,683 72	177	48
May	7,589 43	196	60
June	8,847 88	191	44
July	6,188 23	161	31
Aug.	6,287 93	174	49
Sept.	6,984 00	181	34
Oct.	6,095 57	166	61
Nov.	6,392 81	165	52
Dec.	7,721 32	199	65
	$86,927 05	2,193	602

Applications in 1848, 1,628; 1849, 1,955; 1850, 2,193. Cases granted in 1848, 607; 1849, 595; 1850, 602. Patents issued in 1848, 660; 1849, 1,076; 1850, 995. Cash received in 1848, $67,576 69; 1849, $80,752 78; 1850, $86,927 05. Cash expended in 1848, $58,905 84; 1849, $77,716 44; 1850, $80,000 95.

There were 238 more applications last year than the year before. The number increases rapidly every year,—the march of invention is onwards—improvement succeeds improvement with astonishing rapidity.

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TO CORRESPONDENTS.

L. S. S., of Ohio.—Your drawing and description is not clear; if you could send us a small model we could judge better of its novelty. The expense would have to be paid by you.

I. F. D., of Brooklyn.—We do not believe your plan would work well. The examiners of the Patent Office think these devices of doubtful utility, and have rejected applications based upon this assumption, and Mr. Ewbank has signed them. He would pay no attention to your letter, of this we profess to know how he would manage.

T. R., of Ohio.—The under strata of the Russ pavement, in our city, is made of the concrete described by you. The large blocks are laid on top.

J. G., of Pa.—Yours has been received and will appear next week.

T. M. C., of Phia.—We do not know of any one at present who would take an interest with you in the English application. The expense is so great, and the certainty of success so doubtful, that, in our opinion, you will find it difficult to engage any one in the case. We wish you success.

E. S., of N. H.—Yours of the 1st, enclosing $23, is received: we shall attend to your friend's business when he comes on.

J. H., of Pa.—It is perfectly true what you say, but the rough log has reference only to floating in a river as might be inferred from another proposition. In nearly every river there are some counter currents; therefore the form of least resistance has the advantage over that of the greatest, although both are advanced by the current of greatest force.

O. H., of N. Y.—So far as we know, your improvement in the Harp is new: we have never seen clutches like the one you have presented in your sketch. They both appear to be patentable.

D. M., of N. Y—A small work on natural philosophy by Neale, of London, exhibits the magnetic equator. Its cost is not over 37 cents.

D. B., of N. Y.—We will give yours attention.

L. J. T., of Mass.—We do not, at present, know the modelling composition to which you refer; if we discover it you shall be informed. We shall also acquaint you about a suitable situation, if such an one comes under our notice.

P. M. E., of N. C.—The potash used for soap is the common kind, which can be purchased in the stores; it is dissolved in a small quantity of water. It must be very strong, and is poured upon the grease and boiled for some time. We cannot give you the information about the brick moulds, &c., at present.

J. P., of ——— —Yours about the Filter we shall publish soon.

T. P. C., of Ohio.—We understand your contrivance, as explained in your letter of the 28th June and think it would be useful if made to work well. If the same machinery has been used for other purposes, its application to a new purpose does not involve invention. If the contrivance is new you could obtain a patent for it. We have no additional instruction to give until the sketch and description are received.

G. S., of Ct.—Yours of the 1st is received and has been examined. The specific point upon which you desire to base a claim, could, we think, be patented. We have not been able to find any such arrangement connected to a wrench. As you do not explain the nut working on the bar, fully, we do not fully understand its operation. It looks something like the patents of Hewitt, Cowles, and Merrick,—we can tell upon receipt of the model, which you can send when complete.

N. M., of Ohio.—The manufacturers warrant the machine to do all the statement says—we do not. The weight without the frame cannot be much short of 150 lbs. Cash price $25; it can be shipped to Pittsburg without trouble and at any time you order. You can make the ways of suitable length to accommodate the stick to be turned.

W. A. B., of Phila.—We have received yours, and understand its principles. It is new to us and strikes us favorably; there is a practical difficulty however, in its operation. We have had a section of Broadway paved rough for the horses and smooth for the wheels. It has not answered the purpose owing to the great amount of crossing the track.

J. C. S., of N. Y.—Yours of the 1st inst., enclosing $1 came safe to hand. We will look for your article, and if found it will be sent to Prof. H.

S. J., of N. Y., J. E. B., of Geo., H. C. A., of S. C., and A. J. R., of Mass.—Your models are received and will receive immediate attention.

J. C. W., of N. C.—Your letter of the 23rd ultimo, enclosing $15 is received and will be attended to.

Money received on account of Patent Office business since July 1:

J. W. R., of N. Y., $40; D. H. T., of Mass., $30; J. Van B., of N. Y., $20; A. L., of N. J., $8; H. H., of Mass., $40; E. S., of N. H., $28; W. F. W., of S. C., $30.

Post Office Stamps.

In consequence of the change of rates on the first of next month, we would respectfully notify the public that henceforth, until further notice, Post Office Stamps will not be received at this office in payment for subscriptions to the Scientific American.

Patent Claims.

Persons desiring the claims of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office; stating the name of the patentee, and enclosing one dollar as fee for copying.

Back Numbers and Volumes.

In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement:

Of Volumes 1, 2, and 3—none.
Of Volume 4, about 20 Nos., price 50 cts.
Of Volume 5, all, price, in sheets, $2; bound, $2,75.
Of Volume 6, all back Nos., at subscription price

New Edition of the Patent Laws.

We have just issued another edition of the American Patent Laws, which was delayed until after the adjournment of the last Congress, on account of an expected modification in them. The pamphlet contains not only the laws but all information touching the rules and regulations of the Patent Office We shall continue to furnish them for 12 1-2 cts. per copy.

ADVERTISEMENTS.

Terms of Advertising:

One square of 8 lines, 50 cents for each insertion.
" 12 lines, 75 cts., " "
" 16 lines, $1,00 " "

Advertisements should not exceed 16 lines, and cuts cannot be inserted in connection with them at any price.

American and Foreign Patent Agency.

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for **obtaining Foreign Patents are** unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents. In the item of charges alone, parties having business to transact abroad, will find it for their interest to consult with us, in preference to any other concern.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

BEARDSLEE'S PATENT PLANING MAchine, for Boards and Plank —This recently patented machine is now in successful operation at the Machine Shop and Foundery of Messrs. F. & T. Townsend, Albany, N. Y., where it can be seen. It produces work superior to any mode of planing before known. The number of plank or boards fed into it is the only limit to the amount it will plane. For rights to this machine apply to the patentee at the above-named foundery, or at his residence, No. 764 Broadway, Albany. GEO. W. BEARDSLEE. 43tf

MORTISING MACHINE.—Dear Sirs: I received the Portable Mortising Machine about 3 weeks ago: I have used it, and am very well pleased with it. It is the best plan of a machine of the kind I have ever seen. W. R. McFARLAND.
Nashville, Tenn., June 22, 1851.
The above machines are for sale by MUNN & CO., price $20—boxed and shipped. 42 tf

BRICK-MAKER WANTED.—I am desirous of obtaining a foreman for an extensive brick-yard: it will be necessary that he be a sober industrious man, a practical brick-maker, fully competent to superintend the work of 40 men; to such a person a salary of $500 a year would be given; situation permanent, upon good behavior. Address A. MILLER, Raleigh, Canada West. 43 4

MONTGOMERY MANUFACTURING CO'S Iron Works, Montgomery Ala. Capital invested, $250,000. Steam Engines and Boilers, Reuben Rich's cast-iron centre vent water wheel and iron scrolls complete (the very best wheel in use), sugar mills, saw and grist mill irons of most approved patterns, iron and brass castings of every variety, &c. Orders promptly executed, and upon terms as favorable as can be secured from the best northern establishments. When required, deliveries made (through their agents) at Mobile or New Orleans. Address GINDRAT & CO., Agents. 42 3m

A. B. WILSON'S SEWING MACHINE, justly allowed to be the cheapest and best now in use, patented Nov. 12, 1850, can be seen on exhibition at 195 and 197 Broadway, (formerly the Franklin House, room 23, third floor,) N. Y. Rights for Territory or Machines can be had by applying to WM. S. LOVELL, Agent. 42 2*

FOR SALE—One 41-2 feet Iron Planer, weighing 1,700 lbs., a good machine. Also second-hand Engine Lathes—one a screw lathe. Apply to 42 6* ELI WHITNEY.

15 HORSE-POWER ENGINE & BOILer for $1000.—We have for sale a first rate Engine and boiler, built by Stillman, Allen & Co., of the Novelty Works, which will be sold at about half its original cost. The boiler is 20 feet long and 35 in. in diameter; 2 return flues, 11 in. in diameter each, with steam chamber top of boiler 2 ft. high, by 16 in. diameter. The heads are wrought iron, with grate bars, fronts, binders, and bolts complete, all made in the best manner, and called by the manufacturers a 20 horse-power boiler; also sheet-iron cap to conduct the smoke from the end of the boiler to the chimney. The Engine is upon a solid horizontal cast-iron frame 13 1-2 ft long, 2 1-2 wide, 9 in. deep; has a belt balance wheel 8 ft. diameter, 12 in. face; cylinder 2 1-2 ft. stroke and 8 3-4 in. diameter; has copper connecting pipes and heater for heating water before entering boiler; it has double pumps, and the whole is so complete and in such condition that no expense need be incurred in putting it in running order after being properly set. The Engine and Boiler have been in use but 3 years, and are offered at the low price of $1,000 to close a concern. Any one wishing an engine and boiler of the above capacity, will find this an opportunity to purchase cheap which does not often occur.

Any of our subscribers remitting a draft on New York for $1,000, will receive in exchange therefor an engine and boiler which would not be furnished by a manufacturer for less than $1,800. Address
MUNN & CO., (Post-Paid.)

MECHANICS' FAIR.—The Middlesex Mechanic's Association will open their first exhibition for the encouragement of the mechanic arts and manufactures in the city of Lowell, on Tuesday, Sept. 16, 1851. The Committee of Arrangements for this proposed Fair, respectfully invite and solicit all persons engaged in the various branches of mechanism, manufactures, science, and art, to present specimens of their various products for exhibition and premium. Ladies are cordially invited to present specimens of their ingenuity and taste. Preminms will be awarded as the articles presented may merit. Articles for exhibition should be sent on or before Sept. 10th. For more particular information or copies of the circular, address (post-paid) J. A. Beard, Esq., Supt., Lowell, Mass. By order, OLIVER M. WHIPPLE, Chairman.
M. C. BRYANT, Sec'y. 40 10

LAW'S PLANER FOR PLANK, BOARDS, &c., is now attracting much attention on account of its effectiveness, the excellence of its work, its simplicity, and consequent economy. Machines are now in operation in Brooklyn, New York City, and at various points South and West. Rights or machines for sale by H. LAW, 23 Park Row. 35 tf

LEONARD'S MACHINERY DEPOT, 109 Pearl st. 60 Beaver, N. Y.—The subscriber is constantly receiving, and offers for sale, a great variety of articles connected with the mechanical and manufacturing interest, viz., Machinists' Tools—engines and hand lathes, iron planing and vertical drilling machines, cutting engines, slotting machines, bolt cutters, slide rests, universal chucks, &c. Carpenters' Tools—mortising and tennoning machines, wood planing machines, &c. Steam Engines and Boilers, from 5 to 100 horse power. Mill Gearing,—wrought iron shafting, brass and iron castings made to order. Cotton and Woolen Machinery furnished from the best makers. Cotton Gins, hand and power, and power presses. Leather Banding of all widths, made in a superior manner, from the best oak tanned leather, Manufacturers' Findings of every description—bobbins, reeds, shuttles, temples, pickers, card clothing, roller cloth, potato and wheat starch, oils, &c. P. A. LEONARD. 33tf.

PATENT CAR AXLE LATHE.—I am now manufacturing and have for sale the above lathes: they will turn and finish six sets per day, weight 5,000 lbs., price $600. I have also for sale my Patent Engine Screw Lathe, for turning and chucking tapers, cutting screws, and all kinds of common job work; weight 1500 lbs., price $225, if the above lathes do not give good satisfaction, the money will be refunded on the return of the lathe, if within six months. J. D. WHITE,
32 13* Hartford, Conn.

GREAT REDUCTION IN PRICE.—The most valuable book of the day, containing domestic and medical recipes, rules with regard to the recovery and preservation of health, an account of the different medical theories of the day, useful tables, &c., entitled "THE GRAEFENBERG MANUAL OF HEALTH." It is complete in one volume of seven parts, and is beautifully printed upon fine paper, in a convenient form of 300 pages. The immense success which has attended the sale of previous editions, has warranted a reduction in the price of this (the 7th) edition, from 50 to 25 cts. per copy. Any number of copies, from one upward, will be forwarded upon the receipt of the money, (post-paid). Address THE GRAEFENBERG COMPANY, 214 Broadway, N.Y., or this Office. 38tf

WOODWORTH'S PATENT PLANING MACHINES: 1851 TO 1856.—For rights at Honesdale, Carbondale, Providence, Pittston, Scranton, Wilkesbarre, Williamsport, Meadsville. Newcastle, and other unoccupied towns in Northern Pennsylvania and New York, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 41 4*

WATTS & BELCHER, Manufacturers of Steam Engines, Lathes, Planing Machines, Power Presses, and Mechanics' Tools of all descriptions: Washington Factory, Newark, N. J. 38 13*

THE COTTON CULTIVATOR, Patented March 20, 1849, is in successful operation in Maury Co., Tenn., both in the cultivation of corn and cotton; it is a saving of one-third the labor usually taken in the cultivation of the above named crops.—State, county, or plantation rights for sale: those wishing to buy will do well to come and see those that use them, and if they do not find them recommended by good farmers as here stated, I will bind myself to give them the right to any State or county. The farmers, in some places, have clubbed together and bought their counties, and have made money by it. The patentee, or some of his agents, will attend most of the Fairs this season, where the Cultivator may be seen. SAMUEL W. AKIN.
Springhill, Maury Co., Tenn. 41 5*

CHILD'S PREMIUM SAW MILL—To Plank Road Contractors and Lumbermen generally.—The subscriber having obtained a patent for improvements in circular saw mills, by which large timber can be cut with as great facility as small, and with one half less power, and one-third less waste of timber than by ordinary mills, offers mills and rights on reasonable terms. For illustration see Scientific American of March 15th, 1851. O. C. CHILD.
Granville, Ill., May, 26, 2851. 39 9eow*

CLOCKS FOR CHURCHES, PUBLIC Buildings, Railroad Stations, &c.—The undersigned having succeeded in counteracting, effectually, the influence of the changes of temperature upon the pendulum, and introduced a new regulator, by which great accuracy of time is produced, also the retaining power (which keeps the clock going while being wound) are prepared to furnish Clocks superior to any made in the United States. Ample opportunity will be afforded to test their performance, and those not proving satisfactory, when completed may be rejected. Astronomical Clocks made and warranted equal to any imported.

Glass (Illuminated) Dials of the most beautiful description furnished. Address
SHERRY & BYRAM,
Oakland Works, Sag Harbor, L. I.

"Mr. Byram has established his reputation as one of the first clock makers in the world"—[Scientific American.

"Mr. Byram is a rare mechanical genius."—[Journal of Com. 29 12eow*

PALMER'S ARTIFICIAL LEGS.—Manufactured at Springfield, Mass., and 376 Chestnut st, Philadelphia, by Messrs. Palmer & Co.—All orders from New York and New England must be made to Palmer & Co., Springfield, Mass.—"I have examined carefully the Artificial Leg, invented by Mr. B. F. Palmer; its construction is simple and its execution beautiful, and, what is most important, those who have the misfortune to require a substitute for a natural limb, and the good fortune to use it, all concur in bearing practical testimony to its superiority in comfort and utility. VALENTINE MOTT.
New York, Jan. 29, 51." 39 6meow*

A CARD.—The undersigned beg leave to draw the attention of architects, engineers, machinists, opticians, watchmakers, jewellers, and manufacturers of all kinds of instruments, to his new and extensive assortment of fine English (Stubs) and Swiss Files and Tools, also his imported and own manufactured Mathematical Drawing Instruments of Swiss and English style, which he offers at very reasonable prices. Orders for any kind of instruments will be promptly executed by F. A. SIBENMANN, Importer of Watchmakers' and Jewellers' Files and Tools, and manufacturer of Mathematical Instruments, 154 Fulton st. 42 2*

DICK'S GREAT POWER PRESS.—The public are hereby informed that the Matteawan Company, having entered into an arrangement with the Patentee for the manufacture of the so-called Dick's Anti-Friction Press, are now prepared to execute orders for the following, to which this power is applicable, viz.—Boiler Punches, Boiler Plate Shears, Saw Gummers, Rail Straighteners, Copying and Sealing Presses, Book and Paper Presses, Embossing Presses, Presses for Baling Cotton and Woollen Goods—Cotton, Hay, Tobacco, and Cider Presses; Flaxseed, Lard, and Sperm Oil Presses; Stump Extractors, &c. &c. The convenience and celerity with which this machine can be operated, is such that on an average, not more than one-fourth the time will be required to do the same work with the same force required by any other machine.
WILLIAM B. LEONARD, Agent,
25tf No. 66 Beaver st., New York City.

MACHINES FOR CUTTING SHINGLES. The extraordinary success of Wood's Patent Shingle Machine, under every circumstance where it has been tried, fully establishes its superiority over any other machine for the purpose ever yet offered to the public. It received the first premium at the last Fair of the American Institute—where its operation was witnessed by hundreds. A few State rights remain unsold. Patented January 8th, 1850,—13 years more to run. Terms made easy to the purchaser. Address, (post-paid) JAMES D. JOHNSON, Redding Ridge, Conn., or Wm. WOOD, Westport, Conn.. All letters will be promptly attended to. 37tf

TO PAINTERS AND OTHERS.—American Anatomic Drier, Electro Chemical graining colors, Electro Negative gold size, and Chemical Oil Stove Polish. The Drier, improves in quality, by age—is adapted to all kinds of paints, and also to Printers' inks and colors. The above articles are compounded upon known chemical laws, and are submitted to the public without further comment. Manufactured and sold wholesale and retail at 114 John st., New York, and Flushing, L. I., N. Y., by
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35tf Painters and Chemists

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BAILEY'S SELF-CENTERING LATHE, for turning Broom and other handles, swelled work, chair spindles, &c.; warranted to turn out twice the work of any other lathe known—doing in a first rate manner 2000 broom handles and 4000 chair spindles per day, and other work in proportion. Orders, post-paid, may be forwarded to L. A. SPALDING, Lockport, N. Y. 21tf

RAILROAD CAR MANUFACTORY.—TRACY & FALES, Grove Works, Hartford, Conn. Passage, Freight and all other descriptions of Railroad Cars, as well as Locomotive Tenders, made to order promptly. The above is the largest Car Factory in the Union. In quality of material and in workmanship, beauty and good taste, as well as strength and durability, we are determined our work shall be unsurpassed. JOHN R. TRACY,
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THOS. PROSSER & SON, Patentees,
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This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch, and work as smoothly as on a straight line, and does excellent work. Sold without frames for the low price of $25—boxed and shipped, with directions for setting up. Address, (post paid) MUNN & CO.,
At this Office.

WOODWORTH'S PLANING MACHINE. For sale, the right to use this justly celebrated labor-saving machine in the following States, viz.: Pennsylvania west of the Allegheny Mountains, Virginia west of the Blue Ridge, Ohio, Indiana, Kentucky, Tennessee, Wisconsin, Iowa, Missouri, Arkansas, Texas, Louisiana, Florida, Alabama, and Mississippi. For particulars apply to the Proprietor, ELISHA BLOOMER, 304 Broadway. 38 10*

SCRANTON & PARSHLEY, Tool Builders, New Haven, Conn., having had many applications for castings from their lathe patterns, with beds planed and screw and gearing cut, have now made arrangements to accommodate that class of customers; this arrangement will enable small shops, with a little more than half of the amount of ready cash, to get them a new lathe. Cuts of these lathes and other tools can be had by addressing as above (post-paid). N. B. Machinists' tools constantly on hand. 40tf

MECHANICS' INSTITUTE FAIR.—The attention of Mechanics, inventors, and artisans is especially called to the Polytechnic Exhibition, which will open at the rooms, cor. Bowery and Division st, on the 15th of May. Those who wish to exhibit models, machinery, &c., of mechanical skill, and those who would like to carry on, permanently, any mechanical occupation that would be in any way curious or attractive to visitors, are requested to call on the Actuary. Steam power will be provided. Well-lighted, warmed, and airy rooms can be had on liberal terms. As this Exhibition is permanent, an excellent opportunity is offered to skillful mechanics to bring themselves into notice. Articles may be sent in immediately and will be taken care of and insured. Z. PRATT, Prest.; T. C. DODD, Actuary. 34tf

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Scientific Museum.

For the Scientific American.

Necrology for the last Half Century---Men of Science.

Benjamin Thompson (Count Rumford), an ingenious philosopher; born at Concord, N.H., 1753, died at Autevil, France, August 21st, 1814.

Archibald Bruce, mineralogist and editor of the earliest purely scientific journal in America; born at New York, February 1777, died February 22, 1818.

Fanjas de St. Fond, mineralogist and geologist; born at Montelimart, 1750, died at Soriel, near Valenci, July, 1819.

Sir Carles Blagden, English philosopher; died at the house of Barthollette Arceuil, near Paris, March 26th, 1820, aged 80.

John Murray, Scotch chemist; died at Edinburgh, July 22d, 1820.

Gowan, the friend of Linnaeus and Jussieu; died 1821, aged 88.

Corvisart, distinguished European physician; died in France, Sept 19, 1821, aged 45.

Alexander Metcalf Fisher, professor of mathematics and natural philosopher in Yale College; born at Franklin, Mass., July 22d, 1794, perished in the wreck of the Albion, April 22d, 1822.

Rene-Just Hauy, mineralogist and honorary canon of Notre-Dame; born in l'Oise, France, February 28th, 1743, died June 3rd, 1822.

Schubert, philosopher; died at Philadelphia, October 22d, 1825.

Scipio Breislak, professor of physics and mathematics; born at Rome, died February 15th, 1826, aged 78.

Reichenback, European philosopher; died at Philadelphia, May 12th, 1826.

Mare-Auguste Pictet, distinguished savant of Geneva, Switzerland; died April 19th, 1826.

Joseph Fraunhofer, a skillful astronomical instrument maker; born at Straubing, Bavaria, March 6th 1787, died June 7th, 1826.

Bode, European philosopher; died November 23rd, 1826.

Pere Simon De La Place, the great French philosopher; born March 23rd 1749, died at Paris, March 5th, 1827.

Alexander Volta, the Italian philosopher; born at Como, 1745, died at the same place, March, 5th 1827.

Francis Alexander, (La Rochefoucauld.) Peer of France and member of the Institute; died at Paris, March 27th, 1827, aged 81.

Chladni, European Philosopher; died April 4th, 1827.

Ramond, European philospher, died May 14th, 1827.

Fresnal, European philosopher; died July 14th, 1827.

William Philips, geologist and mineralogist; died at Tottenham, England, April 4th, 1828.

Dr. Wollaston, astronomer and chemist, born at East Dereham, England, Aug. 6, 1766, died Dec. 22, 1828.

Nathan Smith, professor of physic and surgery, Yale College; born at Rehoboth, Mass., September 30th, 1762, died January 26th 1829.

Thomas Young, physician, linguist, and mathematician; born at Milverton, Eng., June 13th, 1773, died May 10th, 1829.

Col. Jared Mansfield, professor of natural philosophy in the Military Academy at West Point; died at New Haven, his native place, Feb. 3rd, 1830, aged 71.

Stephen Elliott, philosopher; died in 1830, at Charlestown, S. C.

Sir Humphrey Davy, the eminent chemist; born at Penzance, Eng., Dec. 17th, 1778, died at Geneva, May 28th, 1830.

M. Fourier, mathematician, died at Paris, 1831.

J. S. Miller, philosopher; born at Dantzig, died in England, 1831.

Henry Browne, nautical philosopher; died in England 1831.

Sir Thomas Lawrence, artist; died in Great Britain, 1831.

Francis Huber, naturalist, born at Geneva, July 2nd, 1750, died December 22nd, 1831.

Maj. James Rennell, scientific geographer, born at Upcott, England, died 1831, aged 88.

M. Cherevix, French chemist; died in England, 1831.

Amos Doolittle, earliest American engraver; born at Cheshire, Conn., died Jan. 31st 1832, aged 78.

Abbe Angels Cesaris, first astronomer of the observatory of Milan, Italy, died 1832.

Barron Boissel de Monville, geologist and philosopher; died in France, 1832, aged 68.

Geo. Simon Serullas, chemist; died in France, 1832, aged 58.

Auguste Duvau, French botanist; died 1832, aged 61.

Francois Xavier (Baron de Zach) "the dean of astronomers;" born at Pesth, Hungary, June 15th, 1854, died at Paris September 2nd, 1832.

Deville and Meyraux, profs. of Natural History, died in France, 1832.

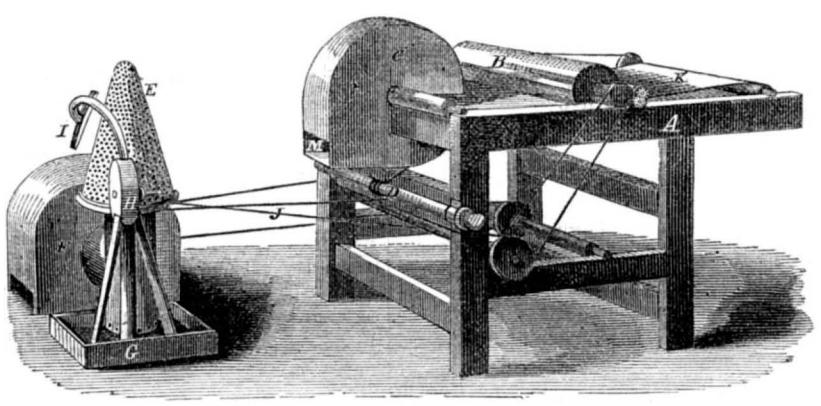
Scarpa, eminent surgeon; died at Pavia, Italy, October 31st, 1832, aged 85.

Gasper Spurzheim, phrenologist; born at Longvich, Prussia, December 31, 1776, died at Boston, U. S., November 11th 1832.

Count Barbara Oriani, Italian astonomer; died at Milan, November 12th 1832, aged 80.

[This subject will be completed in another paper. It is very valuable information, and has been prepared with great care by an able scientific friend, and may be relied upon as being correct.

IMPROVED MACHINERY FOR MAKING HAT BODIES.



The accompanying engraving represent improvements in machinery for making hat bodies, invented by Mr. Daniel Barnum, of Philadelphia, the patent for which has just been granted, and the claim will be found on our list of this week.

A represents the frame, with B, the picker, arranged and combined with feeding rollers and apron, as seen at K, and also with a chamber between the picker, B, and fan C, there being an aperture under the picker for the admission of air, the arrangement and operation of these several parts being substantially the same as one section of the common fur blower, except that the chamber is reduced in height. C is a small fan combined with the chamber and through which it receives its suyply of air from the aperture under the picker, B: a current of air passing through the chamber is induced by the exhaust action of the fan, sufficient in volume and velocity to receive the opened fibres as they fall from the picker, B, and to concentrate them within the fan casing, from which they are suspended in the air surrounding the exhausted perforated cone, E, through a small square aperture, M, in lines forming tangents to the circle made by the fan. The casing of the fan, c, is made adjustable by means of the shaft, D, around which is seen a cord extending each way, the two ends of which are attached to different points of the casing, so that by turning the shaft, D, to the right and left, a circular vibratory motion is given to the entire casing, thus elevating or depressing the aperture, M, at pleasure. This arrangement gives perfect control over the distribution of the fibres upon the cone, by simply changing the position of the aperture, M, as the lines radiating from the fan through the small aperture, are thus made to embrace either the lower, the middle, or the upper portions of the cone, as desired; the cone, E, is placed at such a distance from the aperture, M, as will allow the fibres to radiate after leaving the aperture so as to fall evenly upon that portion of the cone within the ranges or tangents from the fan. F is an exhaust fan, having a rapid motion for the purpose of producing a partial vacuum under the cone, E. G is a square box or reservoir of hot water placed under the cone, E, for the double purpose of furnishing a supply of water to wet the hat and also to receive the surplus which passes through the perforations into the exhaust. H is a rotary pump connected with the box, G. I is a perforated sprinkler, with a flexible tube or hose attached to the pump, H; the object of the pump and sprinkler being to produce a steady current of numerous fine jets of hot water to be used in combination with the currents of air, for the purpose of holding the fibres and of wettings them over the exhaust, and of actually commencing the felting process by a motion of the fibres in contact, under a pressure caused by the combined action of the currents of air and water as they pass through the fibres into the exhaust; with these arrangements, the liability to damage the hat, by applying cloth and cones, to make pressure upon the fibres, to hold them while they are removed from the exhaust to immerse them, and in the removal of the cloth (which often takes off portions of the fibre and spoils the work) is entirely removed.

The palpable differences between these improvements and those which have preceded them, are—first, the use of the best known means for opening the fibres, to wit, the small wire picker—while in all previous machines inferior means have, as a matter of necessity, been used in order to obtain a current of air to carry the fibres through a long chamber or trunk. Second, the use of an exhausting fan combined with the chamber, for the purpose of concentrating the fibres by the action of the fan within the fan casing, instead of a large long chamber or trunk, gradually changed in form, for the purpose of concentrating them after they are suspended in the air; and, third, in suspending the fibres through a small square opening in the fan casing of less than one-fourth of the size of the cone, in tangents from the circle made by the fan, without any chamber or trunk, gradually changed to an aperture corresponding in shape, and higher than the cone as hitherto used, between the suspending fan and the cone, or any other means, to control or direct the fibres on to the cone after they are in the air; and fifth, in dispensing with the cloth and outer cones, to make pressure upon the fibres, and also with immersion in the hardening process, and the liability to damage resulting from such application and immersion, and in the facility of operation and perfection of the work.

More information may be obtained by letter addressed to Mr. Barnum, at Philadelphia.

Maryland Mechanics' Institue.

The Fair of the Maryland Mechanics' Institute will be held this in the new hall of the Maryland Institute, an edifice now nearly completed, and forming one of the most important improvements and attractive features of Baltimore. The building is 355 feet in length and 60 in width, and the apartment in which the exhibition is held is 265 feet long, and the entire width of the building. It will old about 6,000 persons. It will open on the 0th of next October. The managers of the exhibition invite mechanics from all parts of the United States to contribute specimens of their productions, for which prizes of gold and ilver medals, and diplomas, will be awarded.

Notice.

The article on Hydraulics is necessarily delayed till next week.

LITERARY NOTICES.

PLYMOUTH AND THE PILGRIMS. By Joseph Banvard: published by Gould & Lincoln: Boston.—This is a very interesting little work, containing incidents of adventure in the history of the first settlers of New England. We are never tired of reading the adventures, the sufferings, and triumphs of those noble Puritans, who left their native land and came here to establish a home for themselves and children in the wilderness and then die. It is very easy to be a patriot now-a-days, for it costs nothing, but it was very different with the old ironsides and the early settlers of America. Every New Englander, no matter where he resides, should own this book.

HARPER'S NEW MONTHLY MAGAZINE, for July, is a splendid number; it contains beautifully engraved portraits of several of the most prominent patriots of 1776, besides a correct view of old "Independence Hall," "Liberty Bell," and fac-similes of the signatures to the Declaration. Accounts of Francis' Life Boats are given with eleven exquisite engravings. The matter, original and selected, is of the highest order, and compares favorably with any previous number. The enterprising publishers have placed this work, in the short space of one year, far in advance of its cotemporaries. Its success is unprecedented in magazinedom—pages, 144; engravings, 31; price, 25 cents. Harpers Bros., 82 Cliff st., N.Y.

NORTH AMERICAN MISCELLANY—A weekly magazine of choice selections from the current literature of this country and Europe. Published by A. Palmer & Co., No. 8 Barclay street, at $3 per annum. The style of this work is handsome, and it is edited with great care and discrimination. On the whole, we doubt if it has a superior throughout the entire range of American weeklies.

HARPERS' NEW YORK AND ERIE RAILROAD GUIDE BOOK, containing a description of the scenery, rivers, towns, villages, and most important works on the road; illustrated by 136 engravings from original sketches: 12 mo., paper, 50 cents; muslin, 62 1-2 cents. Having occasion, recently, to pass over this stupendous highway, we were luckily provided with a copy of this faithful daguerreotype of the road and its scenery, and can bear testimony to its general accuracy: as a matter of history the work will well pay perusal. The getting up is after the usual style of the famous house of Harper & Bros., 82 Cliff st.

SHAKSPEARE'S POETICAL WORKS.—Published by Phillips, Sampson & Co.; Dewitt & Davenport, New York, agents. No. 42, 43, and 44, in one volume, is issued: one more number completes the edition.

"Ecarte," or the Salons of Paris, by Major Richardson, is just from the press of Dewitt & Davenport, price 50 cents. The author tells a capital story always.

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AND
MANUFACTURERS.

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SIXTH VOLUME OF THE
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The Publishers of the SCIENTIFIC AMERICAN respectfully give notice that the SIXTH VOLUME of this valuable journal, commenced on the 21st of September last. The character of the SCIENTIFIC AMERICAN is too well known throughout the country to require a detailed account of the various subjects discussed through its columns.

It enjoys a more extensive and influential circulation than any other journal of its class in America.

It is published weekly, as heretofore, in *Quarto Form*, on fine paper, affording, at the end of the year, an *ILLUSTRATED ENCYCLOPEDIA*, of over FOUR HUNDRED PAGES, with an Index, and from FIVE to SIX HUNDRED *ORIGINAL ENGRAVINGS*, described by letters of reference; besides a vast amount of practical information concerning the progress of SCIENTIFIC and MECHANICAL IMPROVEMENTS, CHEMISTRY, CIVIL ENGINEERING, MANUFACTURING in its various branches, ARCHITECTURE, ASONRY, BOTANY,—in short, it embraces the entire range of the Arts and Sciences.

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PREMIUM.

Any person sending us three subscribers will be entitled to a copy of the "History of Propellers and Steam Navigation," re-published in book form—having first appeared in a series of articles published in the fifth Volume of the Scientific American. It is one of the most complete works upon the subject ever issued, and contains about ninety engravings—price 75 cents.

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